



BUSINESS TECHNOLOGY LEADERSHIP



21st Annual

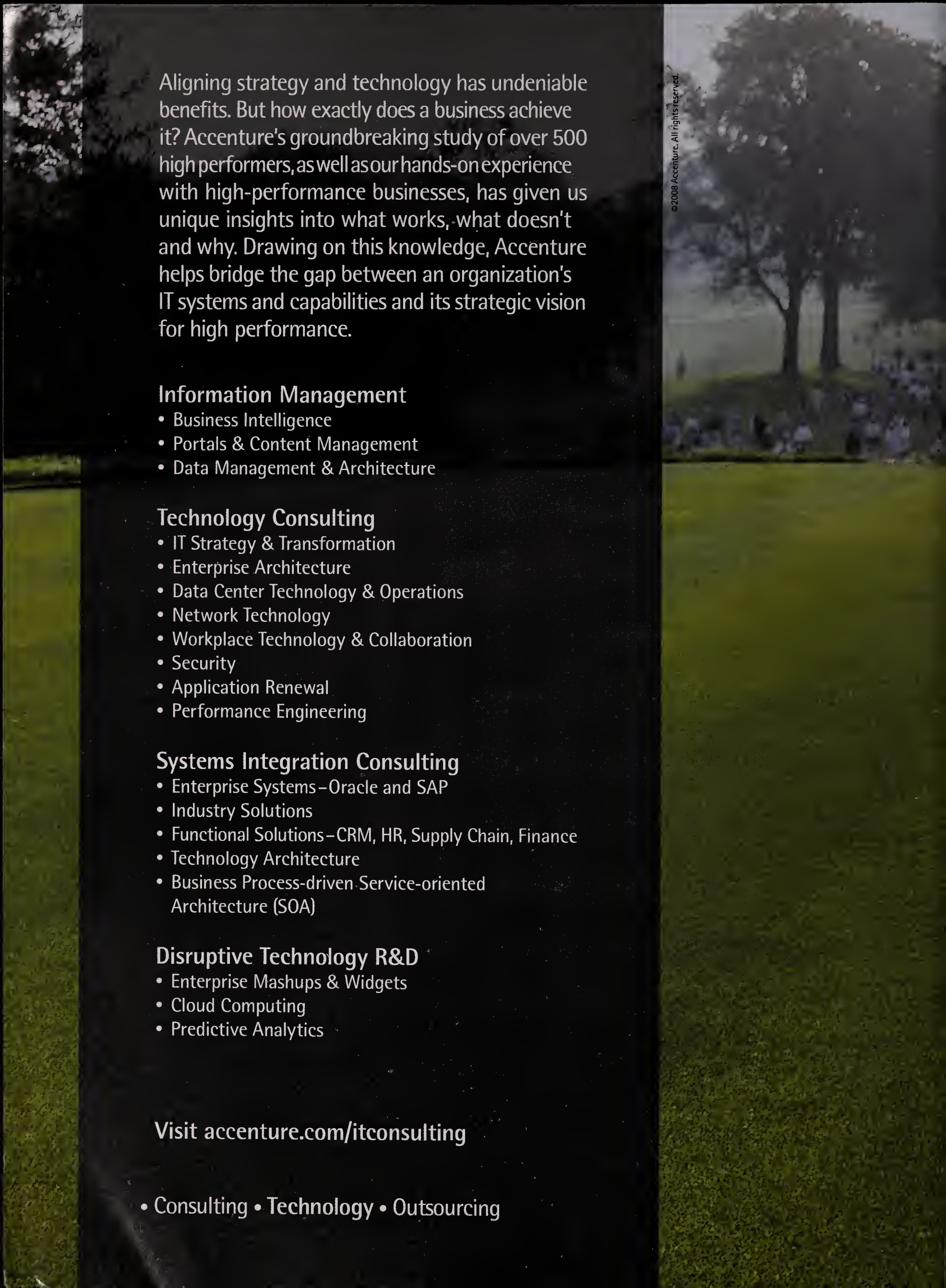


SPECIAL REPORT
Begins on Page 24

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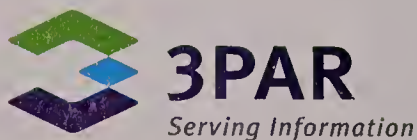
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CIO 100 OVERVIEW This year's CIO 100 honorees are focused on operational innovation. But it's not just back to basics. They're transforming their infrastructure, analytic tools and business processes enabling the next level of competitive advantage.

By Stephanie Overby

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Compiled by Anne Alonzo and Mishal Dholakia

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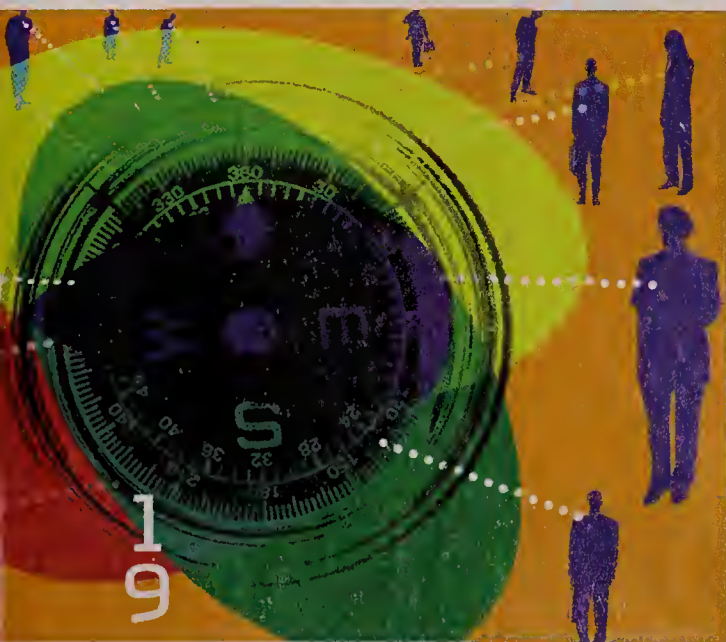
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By Meridith Levinson

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A new report from Forrester Research explains how IT project management metrics influence perceptions of failure; it describes four specific measures project management offices can take to increase the perception of project success. Plus, three keys to getting your projects under control for CIOs frustrated by the pitfalls of Agile methodologies and techniques like Scrum.

» www.cio.com/article/440721; www.cio.com/article/439046

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WHY DEVELOPERS SAY NO TO BEING CIO

Sure, CIOs earn lots of money and don't have to worry about their jobs getting shipped off to India. But they do have to deal with a lot of hassle software developers wouldn't ever want to touch.

www.cio.com/article/440303

Plus: Outlook for IT Jobs in 2009

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[VENDOR REPORT CARD]

I.T. EXECS TO VENDORS: DELIVER ON PROMISES

Our 2008 Vendor Survey finds IT leaders want technology vendors to keep their word, both during and after the sale.

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IT DRILLDOWN

[ARCHITECTURE]

Looking for More SOA Info?

CIO.com's latest drill-down features expert analysis, advice and prognostications about service-oriented architecture and distributed computing. www.cio.com/blog/index/topic/1498

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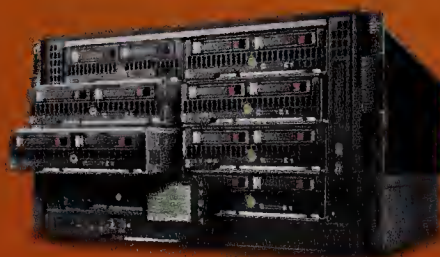
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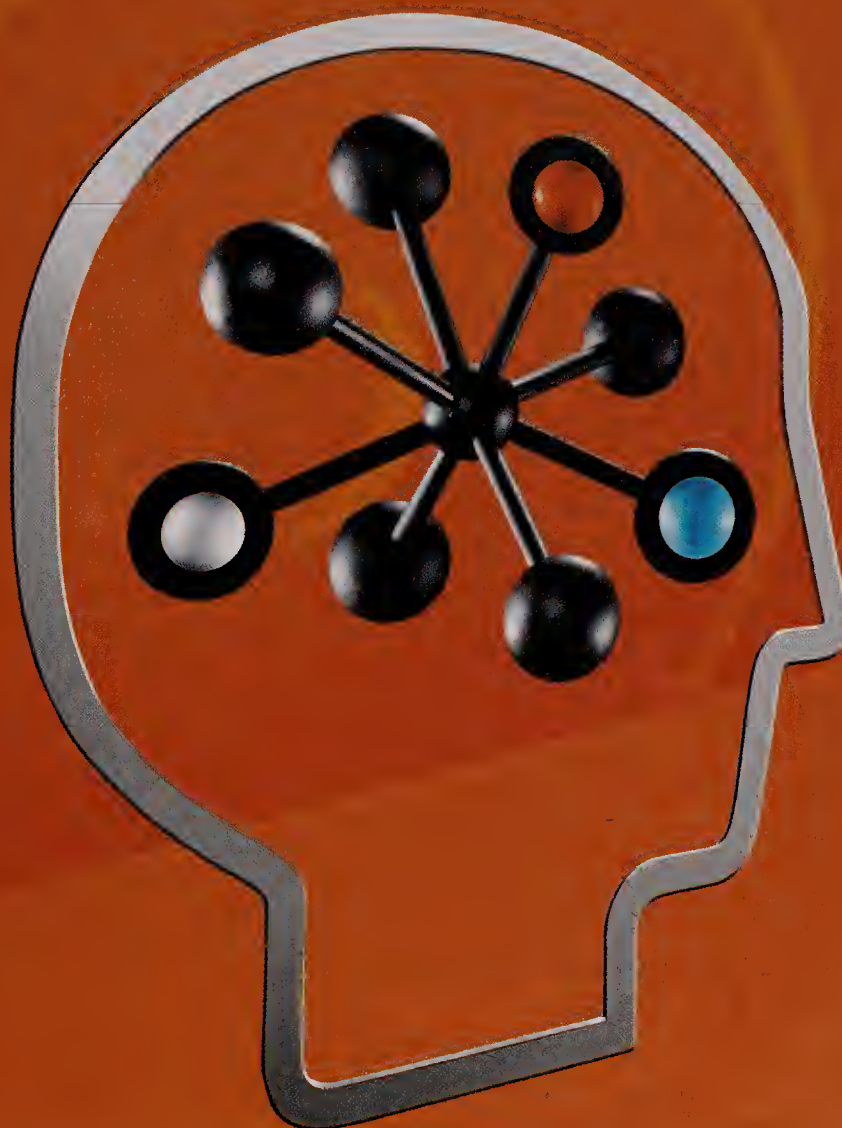
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101 Kudos

Excellent work deserves to be celebrated



Let's face it, 2008 has shaped up to be a tough year for many businesses. I won't bore you with the litany of challenges—you don't need *me* to tell you what they are.

But in the face of these trials, CIOs and their teams have managed to do some extraordinary things. And we at *CIO* are delighted to be able to recognize and profile them in this special issue of the magazine.

The CIO 100 Award honors innovation and value. While many of this year's honorees focused on operational innovation, calling their efforts a return to basics would be like calling what Olympic swimmer Michael Phelps does "taking a dip." Indeed, what they're really doing is transforming their companies—their infrastructures and business processes—to enable the next level of competitive advantage.

As Senior Editor Stephanie Overby writes in "Faster, Cheaper and In Control" (Page 24), smart CIOs this year have focused on service excellence, doing more with less and real business process transformation. Their initiatives address a wide range of business challenges and opportunities, from data center consolidations that save millions of dollars to enabling a virtual workforce. We give you the highlights in our list of winners and projects beginning on Page 32, with more detail online in our CIO 100 honorees' database at www.cio.com/cio100/2008/1.

You may be wondering why I've titled this letter "101 Kudos" when we have 100 honorees. The final tip of the hat goes to the *CIO* team, who demonstrated their own resourcefulness and commitment to excellence in putting together an absolutely terrific package. Special thanks go to Executive Editor Elana Varon who led the project for her fifth year, working with an impressive group of outside experts to do the judging (see the list on Page 33), along with a virtual team of writers and editors that included Overby, Senior Editor Steff Gelston, newcomer Jarina D'Auria, colleagues from *CIO.com*, and one of judge Dennis Anderson's graduate students, Mishal Dholakia, who wrote many of the winning project descriptions. Thanks, too, to Design Director Terri Haas. It's not easy to take a repeating list of 100 things and make it engaging, dynamic and even beautiful, but that's exactly what she's done.

We hope you enjoy this year's CIO 100 issue and that the projects presented give you ideas to meet your own challenges more successfully in the year ahead.

Abbie Lundberg, Editor in Chief
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FROM THE CEO

What's Hot

IT trends come and go faster than a summer storm



The one constant in our industry is change, and every now and then I get a chuckle out of how quickly things become hot or not in this hi-tech world. So, to lighten the mood just a bit in the dog days of summer, here is a quick list of terms, technologies, people and companies that are either "Hot or Not."

Send me an e-mail and share some of the things that are on your list. Pretty certain, by the time you send it to me, it will have already gone out of fashion.

Michael Friedenberg, President and CEO
mfriedenberg@cio.com

HOT	NOT
Cloud computing	On-demand computing
SaaS	Enterprise applications
Unified communications	VoIP
Virtualization	Server farms
Master data management	Departmental data
Mark Hurd	Diane Greene
Execution	Innovation
Apple 3G iPhone	Original iPhone
Data center consolidation	Server sprawl
Mobile devices	Desktops
Convergence	Alignment
Consumer IT	Enterprise IT
Agile development	Waterfall development
E-discovery	Being clueless
Web application security	Firewalls
Social networking	Knowledge management
IM	E-mail
Video conferencing	Travel
Web 2.0	E-business
Alternative energy	Oil
Green=\$\$\$\$	Green= :)
Windows Server 2008	Vista
Dynamic cooling	Air conditioning
Federated	Centralized
GPS	RFID
Google	Yahoo
Bill Gates, philanthropist	Bill Gates, CEO, Microsoft
M&A	Best of breed
Integration	Middleware
IPv6	IPv4
BRIC*	USA
Strategic partner	Vendor
BT	IT
CIO	CIO

*Brazil, Russia, India, China



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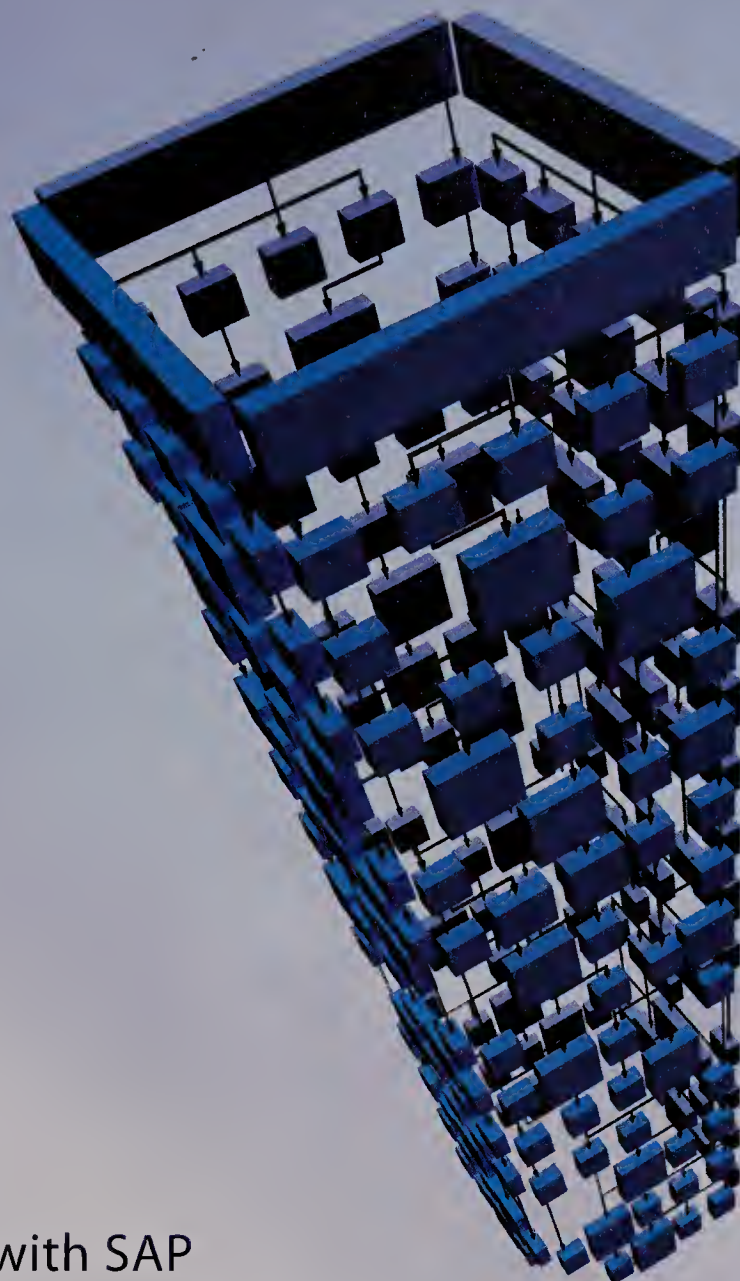


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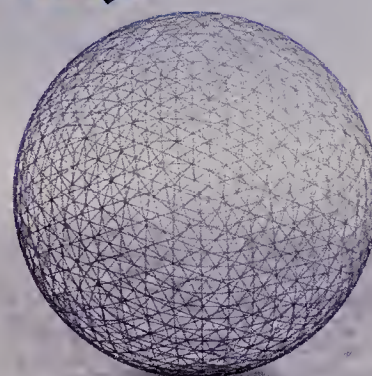
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trendlines

EDITED BY STEFF GELSTON

NEW * HOT * UNEXPECTED

Vets Win Talent War With SOA

ARCHITECTURE Hire A Hero is a small firm with a big mission: helping military personnel transition to civilian life by connecting them with potential employers using Web 2.0 social networking tools. After some fits and starts, it found that a solution built on service-oriented architecture (SOA) enabled it to achieve its goals at a low cost. What's more, because of its nonprofit status, some vendors donated the services for free.

When Hire A Hero started, it had visions of building its own system. But Executive Director Brac Selph knew that if his company were to survive, it needed a new plan that

involved working with existing services. So he cobbled together a solution that involved two software-as-a-service (SaaS) vendors and a data integration tool to act as a bridge between the two systems.

The first piece was Salesforce

.com, a customer relationship management tool built on the SaaS model. Hire A Hero was already using Salesforce to organize information about employees and potential employers. Salesforce helped automate many processes by building in business logic normally used for a sales channel. So if

Continued on Page 14



Corporate Blogs Fail to Engage Customers

COMMUNICATIONS A new report by Forrester Research found that most corporate blogs kept by business-to-business firms failed to energize their intended audiences and engage them in meaningful conversations about trends and products.

The number of corporate blogs being started also experienced a setback. In 2006, Forrester counted 36 firms that were introducing such blogs on their public websites. In 2007, the number of firms introducing a corporate blog dropped to 19.

But the blogs that exist right now are failing to capture an audience, and a big reason could be the content. Of 90 enterprise-sized companies with corporate blogs that Forrester examined, 71 percent of the content was "light company or business topics," with only 16 percent injecting "moderate personal insight" and only 13 percent

using personal anecdotes. About 56 percent of blogs "regurgitate company news or executive views."

The number of comments these corporate blogs received reflects customer reaction to such lackluster content. About 58 percent of blogs saw one or no comments per post. Sixteen percent received one comment and only 13 percent had more than one per post.

To combat this problem, Forrester says, companies should encourage corporate bloggers to start conversations with readers rather than dominate the blog with product launch information. They should also have a clear objective (an "about this blog" area) that explains the blog's overall purpose to readers. Lastly, they should employ pictures, videos and other forms of virtual media to engage readers.

-C.G. Lynch

Analysts: Tough Times Ahead for PC Makers

COMPUTERS The worldwide PC market grew at a healthy 15.3 percent in the second quarter, but the weak economy means tough times, and a wave of consolidation may lie ahead for PC makers, according to industry analysts.

The weak economy has already started taking its toll on the U.S., where belt-tightening among businesses and consumers has led to PC shipment growth in the low single digits, according to figures from IDC (a sister company to CIO's publisher).

To stay competitive, PC makers are slashing prices. That's good news for end users but could mean the end for smaller PC makers if the trend continues. The leading makers can reduce their costs by working with suppliers to get better deals, but smaller vendors don't have that type of leverage, says David Daoud, an IDC research manager. U.S. PC shipments grew just 3.6 percent in the quarter to 17 million units, down from IDC's original prediction of 3.8 percent, Daoud says.

A separate survey by Gartner reported that PC shipments in EMEA (Europe, Middle East, Africa) grew 23.5 percent, while shipments in Asia-Pacific climbed 18.1 percent, according to a survey by Gartner. Notebook sales were particularly strong, growing 40 percent worldwide, it said.

According to Gartner, Apple overtook Acer in the U.S. to take third place behind Dell and HP, shipping 1.4 million units, compared with Acer's 1.3 million. IDC had Acer and Apple neck and neck.

Worldwide, HP retained its spot as top PC vendor, shipping 13.3 million units for an 18.9 percent share of the market. Dell shipped 11.6 million units for a 16.4 percent market share. Acer was in third place with 7 million units shipped. —Agam Shah

SOA

Continued from Page 13

members didn't send a résumé, they got an automatic reminder e-mail message. Salesforce donated the service.

The next piece was a front-end Web tool to enable employers and employees to enter information about themselves into the system and provide social networking functionality. Selph found an SaaS vendor called YourMembership.com, whose tool provided 80 percent of the functionality he wanted for just \$500 a month. It also let him eliminate technical staff, saving \$200,000 a year.

The final piece: finding a data integrator to help get data from YourMembership into Salesforce. Selph began exploring the Salesforce AppExchange for a solution. XAware offered an open-source solution that would work; XAware would provide it for free.

Hire A Hero was now ready to begin automating the data transfer. But there was a problem: YourMembership lacked an open API, and that meant XAware couldn't communicate directly with it to grab data. The solution involved generating a report manually. Despite this, Selph says it still greatly simplified the data transfer and reduced the likelihood of an error during the exchange. Even without the API, there was just a single file to deal with; the XAware tool took care of field mapping, new field creation and duplicate records purging.

Selph advises organizations with similar projects to look beyond the surface of what a company does. Salesforce is a CRM vendor; YourMembership is used by alumni groups. "Be creative because the [SaaS vendor] may market themselves as one thing, but they could fit your needs as well."

Hire A Hero may be small, but the lessons it learned about using a services model could apply to any organization trying to boost efficiency and cut costs.

—Ron Miller

Underestimating Cybercrime Risks

CRIME Small and midsize businesses think they are too small to attract cybercriminals, according to McAfee. A survey by the security vendor of 500 U.S. and Canadian companies also found:

46%

do not think they could make a cybercriminal any money.

44%

believe cybercrime is an issue for larger companies.

35%

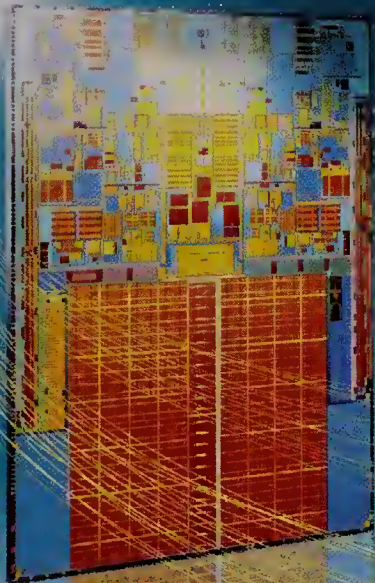
are "not concerned" about being a target for cybercrime.



SOURCE: McAfee



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Conventions Spark Political Passion With IT

POLITICS The Democratic and Republican National Conventions have very different political agendas, but they do have one common goal: to use technology to make the conventions more appealing to the voting public.

This objective is something both Republicans and Democrats pursue every four years. While 2004 saw its share of Internet-based advances in fund-raising, online community building and e-mail campaigns, this year the parties hope to use IT to take things a step further—both to broadcast their messages and to make up for the dwindling network television coverage of the events. For instance, YouTube has partnerships with both the Democratic and Republican National Convention Committees, which give the public a chance to parade their political pride by creating videos revealing which party they support in '08. Both also have YouTube channels for posting convention-related content.

Some other ways the parties use IT to work the crowds at their conventions:

Democrat National Convention

WHERE Pepsi Center, Denver

WHEN Aug. 25–28

WHAT High-definition, gavel-to-gavel streaming video and a “state blogger corps” that will sit on the convention floor with the individual state delegations. Plans also call for video available via the convention’s YouTube channel.

The Democratic National Convention Committee (DNCC) plans to use Microsoft’s new Silverlight 2 cross-platform, cross-browser plug-in to deliver rich media and interactive applications. Silverlight 2 isn’t even due for public release until the fall, so the DNCC will use beta software, according to Microsoft.

Microsoft is also working with another partner, Infusion Development, on a Silverlight- and SQL

Server-based delegate voting system that will provide up-to-the-minute delegate vote totals. Other custom applications include one for tracking individual delegates and another for keeping tabs on Microsoft’s own carbon footprint at the convention, part of the DNCC’s green initiative.

The DNCC, however, is not using Microsoft technology exclusively. The website will run open-source Apache servers on Linux, along with Windows servers. Site content and staff blogs are handled by the open-source SilverStripe content management system and framework. (To learn

more, read “Democratic Convention to Showcase Video Using Microsoft Silverlight 2 Beta” at www.cio.com/article/384863.)

Republican National Convention

WHERE Xcel Energy Center, St. Paul, Minn.

WHEN Sept. 1–4

WHAT Web-based video from the convention floor and other venues, provided by a variety of vendors. The Web strategy also calls for submissions from outside the convention by members of the public, and real-time chat sessions with convention delegates.

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(To learn more, read “Republicans’ Web 2.0 Aims: Streaming Convention Video, Online Chats, User-Generated Content” at www.cio.com/article/372263.)

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ESSENTIAL

FROM INCEPTION TO IMPLEMENTATION—I.T. THAT MATTERS

technology

Edited by Laurianne
McLaughlin
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Microsoft SharePoint's complexity still puzzles many IT pros. Here's how one company uses it to keep a project involving a large cast of players and documents on time and on budget.

How to Make the Most of SharePoint

BY MERIDITH LEVINSON

PROJECT MANAGEMENT | Mat Fahrenkrug and Bill Culhane get paid to handle the nuts and bolts of complicated construction projects. As the owners of Culhane & Fahrenkrug Consulting, they facilitate every aspect of efforts such as a three-year, \$170 million building expansion for the Van Andel Institute, a cancer research facility based in Grand Rapids, Mich.

As the Institute's "owner representatives," Culhane and Fahrenkrug write the contracts for all the architects, engineers, construction managers and subcontractors involved in the building expansion. They get building permits and approvals from the city of Grand Rapids. They make sure the Van Andel Institute is adequately insured and that everyone follows federal and state safety standards. It's a big job with lots of stakeholders and moving parts, and one that generates reams of paper.

When design of the Van Andel Institute's building began in January 2006, Fahrenkrug and Culhane met with institute CIO Bryon Campbell, figuring they'd use their usual choice, an FTP site, to manage documents and logistics. Campbell recommended Microsoft SharePoint, having used SharePoint Team Services in 2005 on another project.

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Campbell told the pair that his IT department could use SharePoint to create a secure, private website that the architecture, engineering and construction teams could use to store and share documents, create threaded discussions and post meeting minutes.

For SharePoint, that list of capabilities is just the start though. In fact, SharePoint has an unusual problem: It's grown to incorporate so many features that some IT shops still have a hard time understanding exactly what it does, or how to deploy and manage it best. But the product's capability around the storage of unstructured data is one of its strengths, says Rob Koplowitz, a principal analyst with Forrester Research. "Organizations see SharePoint as a backbone for getting more control over large amounts of

ping costs and support the Van Andel Institute's environmental sustainability efforts.

The collaborative workspace certainly helped: Culhane and Fahrenkrug have shaved as much as \$250,000 off the cost of the project because they were able to reduce by 50 percent to 60 percent the amount of paper they typically had to print and ship to the various architects and contractors, says Fahrenkrug. Campbell also believes the construction process has been expedited because architects and engineers don't have to wait 24 hours or more for documentation.

"Turning documents around faster translates to building faster, and that translates into cost savings on labor," says Campbell.

"Turning documents around faster translates to building faster, and that translates into cost savings on labor."

—Bryon Campbell, CIO, Van Andel Institute

unstructured data," he says. "All of the things that would have previously been put on a file server or e-mailed around as attachments are great candidates for moving into a more structured environment [like SharePoint]."

Saving Paper and Money

To date, SharePoint has proven to be an effective solution for the Van Andel Institute's construction project. It's provided more capabilities than just document storage. Culhane and Fahrenkrug have used SharePoint's calendaring function to track contractors' vacations. They've set up alerts so that people know when documents are ready for approval. They've used discussion boards for brainstorming, and they've shared specifications.

Fahrenkrug says one goal of SharePoint was to eliminate as much paper as possible to reduce printing and ship-

"SharePoint has worked pretty well, adds Fahrenkrug. "It saved a ton of time and a lot of money and trees, but it hasn't been flawless."

Specifically, SharePoint took some getting used to, and its workflow didn't support the project's requirements out of the box, he says. Provisioning proper access for users was also tricky using SharePoint TeamServices. But the consultants and the Van Andel IT staffer who developed the site worked around those difficulties and crafted a solution that has largely met everyone's needs.

The Right SharePoint Plan

Kim Jeffries, an application analyst at the Van Andel Institute, began developing the SharePoint site in February 2006. She first met with Culhane and Fahrenkrug's administrative assistant, who explained which stakeholders were involved in the design phase of the con-

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struction process and the associated workflows.

The project was going to have different teams focused on areas such as brainstorming, parking, construction and sustainability. These teams would need different levels of access on the site. Jeffries got a spreadsheet listing all the people involved in the design process and the access they'd need. Culhane and Fahrenkrug also wanted an area of the site that only they could use.

"We drew it all out and we ended up with a homepage that everybody hits, with about five subsites off the homepage, a couple of document libraries, main contacts, discussions and at least one private site for our owner rep team [Culhane and Fahrenkrug]," says Jeffries.

Because the Van Andel Institute was already using SharePoint Team Services internally at the time, Jeffries had to build

new teams and individuals as they came on board, because that process was complicated and it needed to be done on Van Andel's local SharePoint server.

Most users learned the system on the fly. Though the SharePoint site took some getting used to, Fahrenkrug says, the user interface is more intuitive than an FTP site, which, in his experience, looks more like a computer file than a webpage and never offers enough storage.

As such, SharePoint makes storage and retrieval of documents easier, he says. Users can access the site whenever they want and they don't have to wait for FedEx deliveries. Jeffries adds that users receive alerts via e-mail whenever a new document is added to the site.

When users need to find a spec, they can simply type the name of it into the search engine on the homepage, which takes them right to it, as opposed to drill-

to update external users' security levels. Van Andel's server administrator created an external Active Directory domain that's not on the Van Andel Institute's network, yet provides Jeffries with a domain that she can use to create and maintain security for SharePoint users who are not Van Andel employees.

"With MOSS, the maintenance is so much easier because I created security groups for every level necessary on each page and subsite, and I created security groups within SharePoint," says Jeffries. "Now, when someone new joins, I go out to the external active directory site, I get their name and plug them into whatever site they need to belong to." Jeffries adds that it now takes less than five minutes to provision access for users.

A Mature Project Picture

In June 2007, three new SharePoint sites were launched for the submittal phase of the project (for a total of five). During this phase, architects and engineers create drawings that they release to subcontractors, who bid on the projects and create more detailed drawings that get sent back to the architects and engineers for review and approval. The three sites have 18 document libraries. There are 25 other libraries on the original nine SharePoint sites used for the design phase of the project. Each folder within each of the libraries on the submittal sites can contain 75 or more documents. "The paperwork being maintained here is amazing," Jeffries adds.

The sites support 108 users and 200 or more gigabytes of storage, according to Fahrenkrug.

Fahrenkrug estimates that the building, which is expected to be completed next year, is about 40 percent to 45 percent completed. "It's right on schedule. It's on budget," he says. And that's due in no small part to SharePoint. **CIO**

Contact Senior Editor Meridith Levinson at mlevinson@cio.com. Comment on this article at www.cio.com/article/397263.

"SharePoint saved a ton of time and a lot of money and trees, but it hasn't been flawless."

—Mat Fahrenkrug, co-owner, Culhane & Fahrenkrug Consulting

accounts for each participant locally on the existing SharePoint server. She didn't want everyone to have access to the network domain and she didn't have an external domain created at the time. Then she had to bring in each participant page by page, library by library, and meeting workspace by meeting workspace. She says provisioning access for users in Team Services was "tedious." Though not technically difficult, the task was time-consuming, making it "the most difficult part" of building the site.

It took about 40 hours over the course of a month to get the site up and running, Jeffries says. When it was completed in March, she turned the content administration over to Fahrenkrug and Culhane's administrative assistant. Jeffries continued to create accounts for

ing through folders to find it, he notes.

Troubleshooting is also easier on SharePoint than on an FTP site, says Fahrenkrug. "With SharePoint, my admin can go in, figure out why they can't get access, and if there is a glitch on our end, we can easily fix it."

Security Elbow Grease Pays

When the Van Andel Institute migrated to Microsoft Office SharePoint Server (MOSS) in January 2007, Jeffries had

Confused About SharePoint?

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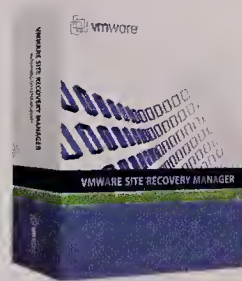


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Fast(er), & Cheap(er) In Control

BY STEPHANIE OVERBY

This year's CIO 100 honorees are focused on **operational innovation**. But it's not just back to basics. They're **transforming** their infrastructure, analytic tools and business processes **enabling** the next level of **competitive advantage**.

Josh Morton almost has to chuckle when he thinks about the IT demands of yesteryear. The customer wanted quality, speed and cost-effectiveness, of course. But back then, you could comfortably tell the user he'd have to pick two, because you certainly couldn't deliver all three.

In 2008, that sounds almost quaint.

"The business reality today is you have to be better, faster *and* cheaper," says Morton, vice president of IT Operations and enterprise testing for Sprint Nextel. He regularly reminds his team—without a hint of hyperbole—that its goal is to provide the same quality of service at half the cost and 10 times faster. The better, faster, cheaper focus led to a revolution in how Sprint's IT organization delivers infrastructure, ultimately enabling the company to be more nimble and improve its own time to market. The effort, a server and storage farm with an integrated infrastructure management layer to automate the provisioning of resources, garnered Sprint Nextel a 2008 CIO 100 award.

A look at this year's CIO 100 honorees reveals the pervasiveness of Morton's mind-set. One-third of this year's CIO 100 honorees—who are being recognized for delivering business value through IT innovation—categorized their projects as impacting operations. More imple-

The JUDGES

This year's CIO 100 applications were each reviewed by two members of our judging panel. The judges are:

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GREGOR BAILAR

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MADELINE WEISS

President
Weiss Associates

“The next round of competitive advantage for businesses will not be provided by capital, labor or raw materials, but resilient business processes.”

—C.K. PRAHALAD, PROFESSOR OF CORPORATE STRATEGY, UNIVERSITY OF MICHIGAN ROSS SCHOOL OF BUSINESS

mentations contained an element of business process management than any other kind of project.

While a focus on operations, infrastructure and process may sound like a step back for IT, there's something more at work. These projects aren't aimed directly at disrupting business models or capturing new markets (the innovations that excite academics and analysts), but they have potential, nevertheless, to change companies. “The next round of competitive advantage for businesses will not be provided by capital, labor or raw materials, but resilient business processes,” says C.K. Prahalad, professor of corporate strategy at the University of Michigan Ross School of Business. Given today's tight economic situation and increasing global competition, IT must accomplish such transformation in more innovative ways. “We're being asked to do more with less so we have to ask, Is that adding value or is there a more creative way that will cost less *and* provide additional functionality?” says Marriott EVP & CIO Carl Wilson.

Thinking Like a Service Provider

Sprint's infrastructure project was driven by the need for speed. In the competitive telecommunications industry, business needs to evolve quickly, explains Morton. The Simplicity, Speed, Standards, Stability (4S) project streamlined the deployment of new application test, development and production environments. IT can now set up a three-tier server environment (a database system, applications and Web environment, along with terabytes of storage) within 15 minutes. That provisioning used to take a few weeks.

Put simply, 4S created an on-demand model for infrastructure support. “You've got to think like a service provider,” says Morton. “You've gotta think like the business. Because if I'm not fast, they *will* go out to someone else.”

The project enabled Sprint to cut equipment and software licensing costs in half, and Morton is applying the new architecture to production environments. “We make those resources available to someone else when testing is over, so you don't have unused capital sitting there,” explains Morton.

Streamlining the IT backbone is one of the best ways IT can enable business innovation at Sprint today. “A greater percentage

of the IT budget is spent in infrastructure and operations than on building and developing new capabilities that give the business value,” says Morton. “By driving better behavior

and conforming to standards, not only will I be better, faster and cheaper, but I'll ask for less budget so you can have more.”

Doing Much More With Even Less

On the face of it, insourcing disaster-recovery operations hardly sounds pioneering. But like its CIO 100 peers, Marriott's IT leaders are looking to wring every last bit of value out of whatever projects they tackle.

Marriott could no longer tolerate the 24-hour recovery period provided by its outsourced disaster-recovery data center. In case of an outage, the company wants Marriott.com and other applications back up within a few hours. “The way to do that was to insource it,” says Wendell Fox, senior vice president of shared services and information resources. “But we wanted to explore how we could get more value from the decision.”

Fox and his team decided to build a disaster-recovery *and* development center where hardware would be used for development, testing and quality assurance in addition to serving as emergency backup. While they were at it, they attacked data center costs by working with Iron Mountain to locate the leased facility in a mine 220 feet underground. The mine has a consistent temperature of 55 to 60 degrees Fahrenheit, a creative way to cut cooling costs in half. (For more details about this project, see “Marriott Goes Underground With Disaster Recovery,” Page 44.)

Creative problem-solving also came into play for CIO 100 honoree University of Notre Dame. A few years ago, the school noticed students moving off campus because of overcrowding. Notre Dame added four new residence halls, then had to attract students back. The students wanted amenities that the dorms didn't offer, like cable TV and Wi-Fi. At the same time, says Notre Dame CIO Gordon Wishon, the residence hall landlines were outgrowing their usefulness. Nearly 97 percent of students were using cell phones. Meanwhile, areas of campus, including some residence halls, received poor or no wireless coverage.

While Wishon was talking about renewing Notre Dame's contract with Comcast and about a deal to bring cable, Wi-Fi—and, hopefully, more students—to campus, a solution emerged. He could turn off the landlines and redirect that money to pay for the new services. But Wishon also had to tackle the spotty cell phone service.

Wishon found a vendor, NextG, that offered a blade antenna system that tucked under the eaves of buildings. Because the system supported multiple carriers, Wishon was able to roll out an emergency notification system with a higher success rate (95 percent of messages delivered) than most school notifica-

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tion systems. Wishon says a strong cellular signal anywhere on campus seems to have encouraged more students to provide their cell phone numbers to the university.

By thinking about the bigger picture, "we solved a range of coverage and capacity issues," says Wishon. Everyone can access wireless services anywhere on campus. Cable came to the residence halls. And the students came back.

Transforming Business Processes

The project that won the Hartford Financial Services Group a CIO 100 honor started off simply. After 9/11, the company realized that it needed a terrorism risk management system. It purchased a standalone system from a vendor that let it examine the existing business and highlight areas of exposure. The company intended to replace the system with a more integrated application. But as plans for the project progressed, IT leaders realized that a broader enterprise risk management system, which covered everything from the likelihood of a natural disaster to an act of terrorism, would be more beneficial.

Rolled out in April, The Hartford's Catastrophe Risk Management (CatRM) Program integrates geographical information systems data with other analytical tools to provide underwriters with a real-time assessment of the risks to specific locations.

Underwriters using the system can see risk-related information about a place (distance to a coast, for example) before they sign new business.

Because CatRM incorporates the first-ever enterprise data mart tied to GIS data services at The Hartford, John Chu, EVP of e-commerce and technology, says the system will enable future capabilities like claims evaluation or cross-product customer information.

Whenever IT can turn the conversation with the business from one about applications to one about business process, it's a win for both, says Alex Cullen, research director with Forrester Research.

During his 11 years as EVP & CIO of Health Plan of Michigan (HPM), the third-largest Medicaid HMO in the state, Thomas Lauzon has always had to look for ways to increase process efficiency and manage his business risk: sick patients. "I realized from day one: One sick person could take us down. One too many employees could take us under," says Lauzon. "So we've tried to be as efficient as we can with our processes. And all of those efficiencies are gained through the IT department."

The latest process improvements have come from a system Lauzon and his team created to integrate data from Michigan's fee-for-service Medicaid program and other sources into

HPM's managed care system—something no other Michigan Medicaid provider had attempted. The result is a comprehensive health record for each of its members, including information about treatment they received before joining HPM.

"Before, we'd have to wait for you to go to the doctor and file a claim before we realized you have diabetes or heart problems," says Lauzon. "Now, we can start helping that member right away."

Lauzon's team wrote business rules to identify new members with severe illnesses. "If you're diabetic and we see you're going to the ER a lot, not getting prescriptions filled and not seeing your primary-care provider, you'll go straight into case management, where the nurse works with you one-on-one to get your health back under control," Lauzon explains. A member with heart disease who is a bit behind in seeing his doctor might be put into a disease management program and receive newsletters and reminders about managing his illness.

How We Chose the CIO100

Beginning last December, we solicited applications for the 2008 CIO 100 Awards through ads in *CIO* and our online newsletters, as well as electronic mailings to our print subscribers and to publicists who sign up to receive our editorial announcements.

Entrants filled out an online application between early January and the end of February. Although most applications came from companies headquartered in North America, the pool included entries from multiple continents.

Two CIO 100 judges—who include former CIOs, academic experts and independent consultants—read each application. The judges evaluated the applications according to two criteria: innovation and business value. Applications that received a score of 13 or higher (out of a possible 20) were selected for a second round of scrutiny.

We examined how each company stacked up against the others in the pool, putting emphasis on submissions that told the best stories about generating business value through creative and cutting-edge uses of technology. We sought to cull the most exciting initiatives in the mix for the CIO 100 honor.

The companies we selected for this year's CIO 100 Awards range from private organizations with a million dollars in revenue to multibillion-dollar global powerhouses, and they span every industry. Companies had to demonstrate not only that they were able to create new value using IT and execute their project well but also that they did so in uncommon, innovative ways: pioneering a new technology, applying a familiar technology to a new purpose, setting the bar higher for their competitors. In short, these companies are technology leaders.

—Elana Varon

Back to Basics—and Beyond

Like her counterparts at the Health Plan of Michigan and The Hartford, Patricia

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Lawicki, senior vice president and CIO of Pacific Gas and Electric (PG&E), is interested in transforming processes across the enterprise. "Most organizations right now are taking a holistic, end-to-end view of their processes," says Lawicki.

Three years ago, PG&E decided to revamp its business model with a focus on providing better service to its customers while helping them to improve their energy efficiency and shift their energy usage from peak demand hours. The company created the SmartMeter program, utilizing intelligent gas and electric meters. Other utilities were exploring the meters as a way to eliminate in-person meter reading. Lawicki saw more than a tool for the billing department. She saw a business intelligence tool.

To date, PG&E has deployed 800,000 SmartMeters to homes and businesses in California. The devices allow the company to read meters at frequent intervals and offer customers new time-of-day pricing plans that let them save on their energy bills. Customers can access their energy usage data online. (For more about PG&E's SmartMeter program, see "The 2008 State of the CIO: The Imperative to Be Customer-Centric IT Leaders" at www.cio.com/article/163650.)

This rush of data created an infrastructure challenge. Lawicki had to build a network that would support meter reads every 15 minutes instead of once a month, process a petabyte (1,000 terabytes) of data per year, warehouse it and then make that data available in various forms from PG&E's website to its billing systems.

At Dolby Laboratories, a creator of sound and image technologies, CIO George Lin is focused on reducing complexity. Dolby's Enhanced Licensing Financial (ELF) program is part business intelligence tool, part operational efficiency, part business process improvement—a good example of what Lin and other CIO 100 honorees care most about right now.

Dolby executives were eager to expand their business by positioning their products as an ingredient in more entertainment experiences and consumer electronic devices. But over the years, Dolby had created complex processes for licensing its intellectual property that were onerous both for Dolby and its licensees.

ELF has made it easier to sign new customers, transitioning them from a spreadsheet-based royalty system to a Web-based one. Dolby's compliance team has complete visibility into license infringement, thanks to the ability to reconcile details

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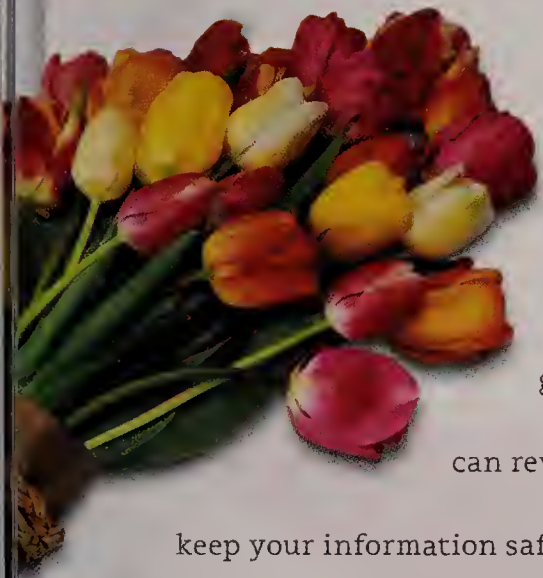
about which products are licensed to which consumer products. Licensing revenues grew from 73 percent of revenues in 2004 to 80 percent in 2007.

But, like Lawicki, Lin is quick to point out that ELF is more than the sum of its IT parts. "If you ask what should IT be helping business on, it's much more than building systems. It's about reengineering business processes to build better systems and make information more readily available." **CIO**

Contact Senior Editor Stephanie Overby at soverby@cio.com. To read a longer version of this story and share your comments, go to www.cio.com/article/440714.

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Honorees

1-800-Radiator

KALANI KEALA, VP of Software Development

Mike Rippey, CEO

2007 Revenue ► \$117 million

AUTOMOTIVE The auto parts distributor deployed a central ERP system that provides customer relationship and inventory management for its headquarters and franchises. The franchisees can use the Web-based system to quickly source parts from any major manufacturer. The system tracks data on customer contacts and purchases. Regular analysis of customer data provides franchisees with sales and marketing strategies. The system helped the company nearly double its revenue in four years.

Accenture

FRANK MODRUSON, CIO

William Green, Chairman & CEO

2007 Revenue ► \$19.7 billion

BUSINESS SERVICES Accenture deployed its Borderless Workplace initiative in nearly 50 countries to foster better collaboration and knowledge sharing. The project provides instant messaging, telephony, audio and video conferencing as well as real-time document sharing, virtual whiteboards, and PC-to-PC audio and video conferencing. The company saves millions on international calls, conference calls and bandwidth utilization.

Aflac

GERALD SHIELDS, SVP & CIO

Daniel Amos, Chairman & CEO

2007 Revenue ► \$15.4 billion

INSURANCE The Mobile.Aflac.com project provides wireless access for sales associates to data and services from Aflac's worldwide headquarters. The system extends the existing portal infrastructure so that content can be developed and delivered to mobile devices capable of supporting basic HTML browsers and Internet connectivity. Aflac's sales associates are perceived to be more in touch with their clients. It also reduces sales agent status requests normally transmitted to the Customer Service Center via phone or e-mail, reducing call volume.

Alcatel Shanghai Bell

ZHANBEI ZHU, VP & CIO

Frederic Rose, CEO

2007 Revenue ► \$2.6 billion

TELECOMMUNICATIONS As part of its merger with Lucent Technologies in China, Alcatel Shanghai Bell consolidated its data centers and deployed a single instance of SAP. The company also deployed a common platform and simplified processes for 10,000 employees to manage purchasing, travel and other administrative processes. The division saved \$2 million in 2007, with a projected three-year return of \$10 million.

American Psychological Association

TONY F. HABASH, Executive Director of Technology & CIO

Norman B. Anderson, CEO

2007 Revenue ► \$106 million

NONPROFIT The professional association uses PsycNET as its platform to deliver scholarly content in psychology. During the past two years, it conducted extensive usability testing and tailored PsycNET's search capabilities to how users interact with the database of 2.5 million abstracts, 140,000 full-text journal articles, 25,000 book chapters, 38,000 book reviews and other materials. Among the benefits of the open-source project: There has been an increase in the subscriber base from 221 to 345 institutions in the first six months of the project.

Applied Materials

RON KIFER, Group VP & CIO

Michael Splinter, President & CEO

2007 Revenue ► \$9.7 billion

MANUFACTURING The electronics manufacturer developed Controlled Release to fine-tune delivery of materials to the manufacturing floor. The application, which runs within the company's Oracle ERP system, has built-in controls that prevent suppliers from shipping products earlier than needed. Applied Materials has reduced inventory carrying costs by \$13.5 million and forecasts annual savings of \$50 million.

AT&T

THADDEUS ARROYO, CIO

Randall Stephenson, Chairman & CEO

2007 Revenue ► \$118.9 billion

TELECOMMUNICATIONS AT&T implemented a model-driven architecture (MDA) for its Common Services Interface (CSI), the platform that retailers use to interface with AT&T's customer support, billing and provisioning systems. The MDA allowed AT&T to enable iPhone customers to activate their phones from home. New vendors can be on-boarded to the system about 25 percent faster than before MDA was implemented: These

2008

new business partners handle more activations and upgrades in a shorter period of time. In December 2007, CSI processed more than 1.4 million activations and more than 1.2 million upgrades in comparison to 6,000 activations and 11,000 upgrades a year earlier.

Best Buy

ROBERT WILLETT, CEO,
Best Buy International & CIO
Brad Anderson, Vice Chairman & CEO
2007 Revenue ► \$35.9 billion

RETAIL Best Buy's Remote Service Project, deployed in North America and the United Kingdom, enables more than 10,000 of its Geek Squad Agents to perform computer repair, maintenance and other services remotely, 24/7. The ability to distribute work to available staff regardless of location has improved turnaround time for customer service requests by 31 percent, enabled agents to serve 25 percent more customers and improved redo rates by 33 percent. Best Buy also attributes an additional \$6.2 million in annual sales to the system.

BNSF Railway

JO-ANN OLSOVSKY, VP of Technology Services & CIO
Matthew Rose, Chairman, Pres. & CEO
2007 Revenue ► \$15.8 billion

TRANSPORTATION BNSF's Fuel MVP program enables fuel-efficient train-handling practices. BSNF uses portable devices to gather the information about locomotive throttle positions and fuel consumption from onboard train computers. It then analyzes the data to compute a fuel efficiency score for each of its engineers and rewards top performers. In 2007, BNSF reduced fuel consumption, up to 1.5 percent in some regions.

BP

PHIROZ DARUKHANAVALA, VP & CTO
Tony Hayward, Group CEO
2007 Revenue ► \$284 billion

MINING/OIL/GAS BP deployed a system to monitor the condition of its equipment using an algorithm it developed to predict weeks or months in advance any problems that might occur. By conducting planned rather than emergency

maintenance, BP is able to ensure that the right relevant parts are available at its production facilities, significantly reducing repair times and maximizing revenue.

Brigham and Women's Hospital

SUE SCHADE, CIO
Gary Gottlieb, President
2007 Revenue ► \$1.7 billion

HEALTH CARE Brigham and Women's Hospital was among the first healthcare organizations to implement the Balanced Scorecard to improve hospital performance. The hospital used SAS Strategic Performance Management for Healthcare to improve health services, patient experience and business management. The system helps BWH turn data from more than 80 disparate sources that relate to 50,000 patient encounters per year into strategy for operations throughout the hospital, whether in a patient-care setting or in the business office.

BT Group

AL-NOOR RAMJI, CIO
Ian Livingston, CEO
2007 Revenue ► \$40 billion

TELECOMMUNICATIONS As part of its multiyear project to transform its infrastructure for delivering telecommunications services, called the 21st Century Network, BT increased its use of agile programming processes. Currently 70 percent of IT projects use agile methodologies, up from 14 percent three years ago. Project cycle times have been reduced from 18 months to three months. Meanwhile, employee performance reviews are conducted every 90 days; if project objectives are met, workers receive bonuses.

California Department of Health Care Services

MICHAEL NGUYEN, Acting Deputy Director & CIO
Sandra Shewry, Director
2007 Revenue ► \$37.9 million

HEALTH CARE California's Department of Health Care Services (DHCS) deployed comprehensive encryption from hard drives to laptops to data in

transit to protect information about patients in state-funded healthcare programs. The encryption policy has set the standard for California state government. Since the policy took effect, DHCS claims that although it has lost laptops it has not had any data breaches.

Celestica

PATRICK FLYNN, SVP & CIO
Craig Muhlhauser, President & CEO
2007 Revenue ► \$8.1 billion

MANUFACTURING Celestica deployed Liveshare, a software-as-a-service solution hosted by E2Open, and integrated it with Celestica's ERP systems to synchronize its processes with global suppliers. The improved response times and efficiency gains have allowed the company to eliminate millions of dollars of inventory that was required as a hedge against slow supplier response times. The company reports a 33 percent improvement in response time by suppliers.

Cisco Systems

REBECCA JACOBY, SVP & CIO
John Chambers, Chairman & CEO
2007 Revenue ► \$34.9 billion

TELECOMMUNICATIONS Cisco's internal Enterprise Class Teleworker project provides unified communications services to staff who work at home. Services include wireless access to corporate systems, voice-over-IP and video-conferencing services. Users can enter data, including services they need, and have their home routers configured automatically. Cisco projects the system will have 26,000 users by July 2009. The company expects to save \$2.5 million over two years by having users provision themselves, and another \$665,000 annually by getting rid of corporate-paid home phone lines.

Coca-Cola

JEAN-MICHEL ARES, SVP & CIO
Neville Isdell, Chairman & CEO
2007 Revenue ► \$28.9 billion

MANUFACTURING Coca-Cola's MyCokeRewards program allows consumers to collect and redeem points for rewards and prizes online by, among other methods, using their cell phones. More than 9 million consumers have reg-

A man in a black t-shirt with 'SECURITY' written on it and sunglasses is blocking a crowd of people. He has his hand outstretched. In the background, a crowd of people is visible, some holding a sign that says 'MARRY ME'. A yellow sign on the wall says '★ CIO ★'. The scene is set in a hallway or office area with blinds visible on the left.

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Continental Casualty

JOHN GOLDEN, EVP & CIO

Stephen Lilienthal, Chairman & CEO
2007 Revenue ► \$9.8 billion

INSURANCE Continental Casualty used business process management technology to design integrated applications for managing account information, invoices, order processes and customer service. BPM tools let it build application components more quickly. The project paid for itself within 16 months, saving the company \$23.5 million by reducing write-off expenses, eliminating collections consulting and decreasing bad debt reserves.

Con-way

JACQUELYN BARRETTA, VP & CIO

Douglas Stotlar, President & CEO
2007 Revenue ► \$4.4 billion

TRANSPORTATION Con-way designed a system to manage freight movement and dock operations to reduce the dock coordinators' planning time. Dock coordinators used to spend two hours per shift assigning trailers to the doors where forklift operators would unload them. Step Saver uses a mathematical model to automate the process. It reduced planning time by 35 percent and increased pounds moved per man-hour by 5.3 percent for an annual savings of approximately \$3 million dollars.

Corinthian Colleges

CARMELLA CASSETTA, SVP & CIO

Jack Massimino, CEO
2007 Revenue ► \$933 million

EDUCATION Corinthian Colleges' Project Unify provides a single student administration system across 110 locations in the United States and Canada, and would enable the use of consistent business processes across all divisions and campuses. It integrated CampusVue, a commercial application for managing student data, with an Oracle ERP system. The company was able to retire legacy systems, saving money for individual campuses and making it easier to implement new business initiatives.



PHOTO BY STEVE NIEDORF

Schwan Food

CIO KATHLEEN McNULTY

CEO Greg Flack
2007 Revenue ► \$3.5 billion

How **Schwan** Cashed In on Server and Desktop Virtualization

Frozen foods company warms up to hardware, energy and staff savings

John Mount's attitude toward server and desktop virtualization couldn't be more enthusiastic. "If we can virtualize it, we will," says Mount, senior director of IS infrastructure for Schwan Food, a privately held frozen foods company.

Mount and Cory Miller, senior IT operations manager, have virtualized more than 50 percent of the company's servers and desktops in the past six years. That's a lot of cost put on ice.

The virtualization project began in 2002, with the focus on reducing space in the data center and facilitating a disaster-recovery plan. "Both projects started out focusing on two different requirements," says Kathleen McNulty, senior VP of information services and CIO. "As we saw the values virtualization could provide, additional benefits were identified, which expanded into our virtualizing many of the desktops in the company."

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Schwan, which spent about \$2.2 million on virtualization projects, realized a savings of over \$900,000 by eliminating the need to buy more than 100 additional servers. The company says it saved more than \$1.5 million on the purchase of new PCs because it extended the life of desktop machines by converting them directly to virtual devices or replacing with Wyse thin-client Windows appliances. And by consolidating servers, electrical consumption was curtailed, producing a savings of \$10,000 to \$12,000 per month.

Schwan also reduced the amount of rack space consumed by network gear. And through attrition, it has also reduced staffing. "We'll see an annual savings of \$350,000 over the next two years," says Mount.

What else is innovative about Schwan's virtualization project? Virtualization has transformed the company's disaster-recovery plan, Mount says. By virtualizing the servers,

the company can replicate them to the disaster-recovery site located 600 miles away in Chicago. "With virtualization, we are able to buy less physical hardware at our disaster-recovery site and are able to bring up more systems on the same amount of physical hardware," Mount says.

Schwan's virtualization project has been a success on levels that go beyond saving space. "Virtualization has enabled greater business value than we originally anticipated, through greater flexibility in provisioning environments, cost savings in both equipment and power, and significantly improving our disaster recovery responsiveness," says CIO McNulty.

—Deni Connor

Deni Connor is a writer and principal analyst for Storage Strategies NOW in Austin, Texas. To read a longer version of this article and to share your comments, go to www.cio.com/article/429414.



{SCHWAN CONTINUED}

CPS Energy

CHRISTOPHER BARRON, VP & CIO

Milton Lee, GM & CEO

2007 Revenue ► \$1.9 billion

UTILITIES CPS Energy's Project Magellan provides mobile IT services to field staff, most of whom did not have PCs, cell phones or Internet access. CPS is distributing smartphones to workers globally who do not otherwise have computer access. Workers now have access to SAP, e-mail, voice mail, and other corporate systems. Field employees work more efficiently because they have access to data they need to repair equipment and avoid accidents. The technology is also deployed internationally. The company saved \$50 million to date by avoiding purchasing and procurement delays.

Credit Suisse Group

ALEXANDER PASTRON, IT Director, Head of Grid Program

Brady Dougan, CEO

2007 Revenue ► \$38.4 billion

FINANCIAL SERVICES Credit Suisse used virtualization to manage growing global demand for application services. The bank organized its Enterprise Grid

Shared Service Group to create a centrally managed global enterprise grid to provide utility computing. The company estimates it has avoided \$10 million in maintenance costs and improved processing performance.

Cross Country Automotive Services

MARK CARBREY, CIO

Michael Saxton, President

2007 Revenue ► \$314 million

AUTOMOTIVE Cross Country Automotive Services deployed a custom, services-based CRM application that incorporates GIS and mobile technologies. The company, which provides roadside assistance to motorists, reduced the average call handling time by more than a minute by quickly obtaining the customer's coverage and profile, determining their location and communicating with a local service provider.

Dana-Farber Cancer Institute

JEFF KESSLER, CIO

Edward Benz, President & CEO

2007 Budget ► \$21 million

HEALTH CARE Dana-Farber Cancer Institute migrated from paper-based data capture to electronic data capture for better management of its clinical trial data. The group claims to be among the first academic research centers to deploy the technology, which has not only saved more than 300,000 paper forms, but also helped improve data accuracy and integrity. Investigators have access to research data more rapidly in real time instead of waiting four to eight weeks—enabling them to finish studies and make treatments available more quickly.

Denver Health and Hospital Authority

GREGORY VELTRI, CIO

Patricia A. Gabow, CEO & Medical Director

2007 Revenue ► \$552 million

HEALTH CARE Denver Health and Hospital Authority replaced its PCs with thin clients and is in the process of rolling out the solution to its 120 clinics. Because doctors can log in to their applications quickly from any clinic location, they can see more patients. Users also log fewer trouble tickets. Annual energy savings is estimated at \$131,655.

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Discover Financial Services

DIANE OFFEREINS, EVP, CTO & Pulse

David Nelms, CEO

2007 Revenue ► \$5.1 billion

FINANCIAL SERVICES Discover Financial Services used a "just in time" development methodology to build the software needed to launch its new Discover Motiva Card. The card gives consumers cash rewards for paying their bills on time each month and for every purchase. The development team defined the minimum technology it would need to launch the product, and scheduled additional system development according to when new features would be added. The new product has generated significant new business.

District of Columbia Water and Sewer Authority

MUJIB LODHI, CIO

Jerry Johnson, GM

2007 Budget ► \$294 million

UTILITIES District of Columbia Water and Sewer Authority developed and deployed the High Usage Notification Alerts system, which helps more than 2 million individuals in the Washington, D.C., metropolitan area save water and reduce their water bills. The system analyzes daily meter data and provides automated notifications directly to customers when their water usage is high. Customers can then quickly repair problems such as broken pipes or hoses, and the agency can more efficiently schedule repairs to its own infrastructure.

Dolby Laboratories

GEORGE LIN, VP & CIO

Bill Jasper Jr., President, Director & CEO

2007 Revenue ► \$482 million

MEDIA Dolby Laboratories deployed Enhanced Licensing Financials, a business-intelligence tool, to improve its process for licensing its products to the entertainment and consumer electronics industries, and to identify new markets. The system makes it easier to sign new customers, track licensing revenue and identify companies that are stealing Dolby's technology by using it in their products without being licensed. The

company was able to increase its licensing revenues from \$211 million to \$387 million in the years 2004 to 2007.

Dow Chemical

DAVID KEPLER, EVP, Corporate Director of Shared Services, CIO & Chief Sustainability Officer

Andrew Liveris, Chairman & CEO

2007 Revenue ► \$54 billion

MANUFACTURING Dow integrated various technologies to provide a new suite of desktop productivity tools to support employee mobility. They include remote access to corporate networks, IP phones, audio conferencing, instant messaging, wireless capability at the office, desktop search, Google-based enterprise search and fingerprint readers for secure sign-on. Dow estimates these "Flexibility Enabler" tools saved the company \$78 million through improved productivity.

Earth Class Mail

PAUL IRVINE, VP Engineering

Ron Wiener, CEO

2007 Revenue ► \$700,000

BUSINESS SERVICES Earth Class Mail provides mail management services to corporations. Its high-speed sorter, EcoSystem, scans and digitizes mail and delivers it to recipients electronically. The company can then recycle the hard copies.

eResearch Technology

THOMAS DEVINE, EVP & Chief Development Officer

Michael McKelvey, President & CEO

2007 Revenue ► \$99 million

HEALTH CARE The eResearch Technology's EXPeRT 2 system provides an automated global and corporatewide workflow for the capture, processing, review and reporting of results from its ECG machines during clinical drug trials. The company credits EXPeRT 2 with giving it an edge over competitors by offering customers the flexibility needed to configure their ECG clinical studies to their exact specifications. Revenue for eRT increased from \$86 million in 2006 to more than \$98 million in 2007.

Flowserve

LINDA JOJO, SVP & CIO

Lewis Kling, President & CEO

2007 Revenue ► \$3.8 billion

MANUFACTURING As part of a project to simplify its IT infrastructure, Flowserve used video to push content related to IT department goals and projects to staff around the world. It also established a Facebook-like community to facilitate knowledge transfer among IT workers.

Freescale Semiconductor

SAM COURSEN, VP & CIO

Rich Beyer, CEO

2007 Revenue ► \$5.7 billion

MANUFACTURING The chip maker deployed its Enterprise Business Intelligence program to deliver information and analysis of events on the factory floor in near-real time. The system, which includes data visualization tools, improved Freescale's ability to make faster decisions about manufacturing problems. The processing time for generating reports has been cut from two days to half a day, resulting in annual productivity savings of approximately \$1.2 million in the finance department alone. The system also helped resolve quality problems up to 30 percent faster.

General Motors

RALPH SZYGENDA, Group VP & CIO

G. Richard Wagoner, Chairman & CEO

2007 Revenue ► \$181 billion

MANUFACTURING GM developed the Production Operations Execution Test Simulator (POETS), a toolset for simulating manufacturing plant floor operations that emulates actual vehicle production. Using POETS, GM can simulate, test and validate plant floor systems before they are released into production. It estimates that during deployment of GM's Global Enterprise Production Information and Control System, POETS enabled GM to avoid \$18 million in lost production time.

Goodwin Procter

PETER LANE, CIO

Regina Pisa, Chairman & Managing Partner

2007 Revenue ► \$611 million

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LEGAL Goodwin Procter deployed Matter Pages to manage matter-related information for more than 850 attorneys working in eight different locations. Matter Pages uses Microsoft SharePoint to provide a single access point to all matter-related information, along with a wiki that attorneys can use to discuss their work and exchange information. Among its benefits, the system enables attorneys to pull together information for clients with a click, whereas before it used to take hours.

Hartford Financial Services Group

JOHN CHU, EVP, E-Commerce and Technology

Ramani Ayer, Chairman, President & CEO

2007 Revenue ► \$25.9 billion

INSURANCE The Hartford's Catastrophe Risk Management (CatRM) Program replaces an existing application for assessing terrorism risks of potential customers. Among its capabilities, the system integrates Geographical Information Systems data with other analysis tools to provide underwriters with a real-time assessment of the risks to specific locations. The development of CatRM enabled the company to include an additional 65,000 locations (an increase of 2.5 percent) in its terrorism analysis.

Health Plan of Michigan

THOMAS LAUZON, EVP & CIO

David Cotton, President & CEO

2007 Revenue ► \$311 million

HEALTH CARE Health Plan of Michigan integrated health data from Michigan's fee-for-service Medicaid program and other Medicaid health information into its managed care system to create a comprehensive health record for its members. The system enabled the healthcare provider to more quickly assemble health histories for new members. The organization was able to use this data to provide preventive health services to new patients.

Henry Schein

JIM HARDING, SVP & CTO

Stanley Bergman, Chairman & CEO

2007 Revenue ► \$5.9 billion

HEALTH CARE The healthcare prod-

ucts distributor implemented an interactive analysis tool, Global Vendor, that enables senior management to analyze global sales and purchasing. The Web-based application consolidates data from multiple platforms such as SAP and JD Edwards into a central global database.

Hess

JEFF STEINHORN, VP & CIO

John Hess, Chairman & CEO

2007 Revenue: \$31.9 billion

MINING/OIL/GAS The oil company deployed a database management system that provides real-time data to offices around the world. Among its capabilities: The system synchronizes spatial data from a central database to 40,000 other database instances located in different parts of the world. The company claims to be among the first to achieve real-time replication of spatial data. Because up-to-date information is available anytime, anywhere, employees can make decisions more quickly, increasing the operational efficiency.

Hewlett-Packard

RANDY MOTT, EVP & CIO

Mark Hurd, Chairman, CEO & President

2007 Revenue ► \$104.3 billion

COMPUTER HARDWARE HP's Next Generation Data Center (NGDC) program provided a makeover of the global data center infrastructure, telecommunications network and applications environment. The plan called for consolidating more than 85 data centers into six, redesigning the network infrastructure and consolidating 6,000 applications into 1,600, which were upgraded on new platforms. The NGDC strategy provides a "lights out" environment; high-utilization servers and storage run in highly efficient power and cooling envelopes with a minimum number of operators managing all resources from a remote central control room. HP is reducing IT costs from more than 4 percent of revenue to less than 2 percent and is shifting work assignments. Before, 70 percent of the workforce focused on sustaining legacy infrastructure and applications, while 30 percent worked on innovative projects. Now 20 percent provide support and 80 percent work on innovation.

Hillman Group

JIM HONERKAMP, CIO

Mick Hillman, CEO

2007 Revenue ► \$400 million

MANUFACTURING The supplier of small hardware items (such as nuts and fasteners) deployed its WebFocus business-intelligence tool, which integrates geographic information with business data. Among its capabilities, the system enables the company to optimize delivery routes and challenge complaints from the vendors it supplies. For example, Hillman has saved a total of \$131,000 in fines from one vendor because it could prove that it did not deliver incomplete orders.

IBM

MARK HENNESSY, VP & CIO

Sam Palmisano, Chairman, President & CEO

2007 Revenue ► \$98.8 billion

BUSINESS SERVICES IBM deployed its Enterprise Tagging Service (ETS) to make corporate information easier to find through the company's intranet. ETS enables employees to tag and categorize webpages according to the context, culture and language of their community, similar to the way individuals use public social-bookmarking sites. Through a variety of widgets, an employee can add tags, see their colleagues' tags, and get information about related content and people. The company estimates a financial benefit of \$7.5 million, which includes productivity improvements as well as the value of the information that employees access.

Ingersoll Rand

TIMOTHY FLEMING, VP of IT

Jim Bolch, CEO

2007 Revenue ► \$8.8 billion

MANUFACTURING The company's Industrial Technologies Sector deployed business-intelligence tools from Oracle, creating a common interface to five disparate data sources covering 33 domestic locations, three market channels, multiple business units and 137 product categories. The industrial equipment manufacturer saves \$200,000 annually through increased productivity because employees no longer have to collect and compile data from spreadsheets.

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**Marriott International****CIO CARL WILSON**

COO William J. Shaw

2007 Revenue ► \$13 billion

Marriott Goes Underground With Disaster Recovery

Virtualization helps hotel giant slash recovery time and gain flexibility

Hurricane Katrina and the 9/11 attack on the World Trade Center caused scores of companies to reconsider their disaster-recovery and business-continuity plans. Marriott International was no exception. Its outsourced disaster-recovery program depended on a third-party company that might require up to 24 hours to begin to restore business critical systems. Plus, Marriott might need to compete with others for space at the recovery facility.

That will change next year, when Marriott completes a new “in-sourced” Recovery and Development Center (RDC) in 12,500 square feet of space leased on a long-term basis from Iron Mountain. Marriott anticipates it will slash recovery time for business systems to within four hours, a standard many companies have tried to achieve.

What sets the RDC apart from the typical disaster-recovery facility is its location—220 feet underground in a highly secure and naturally cooled former limestone mine north of Pittsburgh. Marriott calculated the 10-year cost of colocating a new data center at Iron Mountain’s underground facility would be cost-neutral compared to its existing agreement for disaster recovery, according to a spokesperson. Plus, improving energy efficiency would bring significant savings and help the company achieve its environmental goals.

{MARRIOTT CONTINUED ON PAGE 46} ►►►

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INTELLIGENT COMMUNICATIONS

A child's drawing on a white background. The drawing depicts a landscape with a large blue area on the left, a green area on the right, and a brown path or road running diagonally from the top left towards the bottom right. The word "AVAYA" is written in a dark, cursive script, following the curve of the path and the top edge of the drawing. The text is repeated multiple times, creating a decorative border.

"The RDC demonstrates our dedication to developing innovative technology solutions for our business and the environment. The underground facility will enable cost-effective operations and is environmentally friendly, positioning us to lower our energy consumption," says Carl Wilson, EVP and CIO at Marriott.

The need for quicker response and recovery times is driving companies to weigh the cost of existing contracts with external providers against doing the work internally. Many IT staffs also want added flexibility to manage and test disaster-recovery processes. Virtualization is driving those trends because it potentially affords a more cost-effective way to create an in-house test environment, says Gartner Research Director John Morency.

Marriott's strategy is to use virtual servers wherever possible, which makes the recovery process quicker, easier and more reliable. Another benefit: Applications running on virtual servers aren't validated only on a quarterly basis as part of the disaster-recovery test process; they're tested as part of normal operations.

The dual nature of the RDC—as not only a disaster-recovery facility but also a second data center—is an added boon. The development, quality assurance and test systems in the underground facility will be active on a daily basis, until they're needed in an emergency recovery situation. The systems will be identical to those in the production environment. Virtual servers will ease the movement of some workloads from one set of hardware to another, even possibly from servers at the primary data center to servers at the new RDC.

—Carol Sliwa

Carol Sliwa is a freelance writer. To read a longer version or to comment on this article, go to www.cio.com/article/433665.

King County, Washington

DAVID MARTINEZ, CIO

Ron Sims, King County Executive
2007 Revenue ► \$4 billion

GOVERNMENT King County deployed Ingress, a secure portal serving more than 4,000 users in more than 45 local, state and federal law-enforcement agencies. The system uses a distributed management model that enables authorized individuals within each agency, as well as owners of the applications available through the portal, to manage access. Ingress improves public safety by reducing the time required to securely share applications among agencies, thus expediting information exchange.

Level 3 Communications

KEVIN HART, CIO

Jim Crowe, President & CEO
2007 Revenue ► \$4.3 billion

TELECOMMUNICATIONS The telecommunications network operator's Unity program provides a single, consolidated platform for sales, service delivery and billing. It used business process management tools to migrate customer-related processes to a single framework. Level 3 also retired 30 percent of its application portfolio.

Limited Brands

TOM KEISER, EVP & CIO

Leslie H. Wexner, Chairman & CEO
2007 Revenue ► \$10.1 billion

RETAIL The retailer deployed its Insight system at its more than 1,600 Bath Works stores. The massive ERP implementation, which the company claims is unique among retailers in its size and scope, encompasses inventory management, merchandise planning and allocation, financial data, warehouse management, order management, a data warehouse and logistics. The new applications were integrated with the company's legacy point-of-sales systems. Now, virtually all products are pulled to stores based on information about store layouts, demand forecasting, order management and logistics systems, rather than being pushed to stores based on supplies in inventory.

Lockheed Martin

SONDRA BARBOUR, CIO

Robert Stevens, Chairman, President & CEO
2007 Revenue ► \$41.9 billion

AEROSPACE/DEFENSE The defense contractor's Global Vision network enables collaboration among a virtual community of users in more than 60 labs around the world. The network integrates high-definition audio and video technologies in a secure environment. Global Vision is connected to the U.S. Department of Defense lab and experimentation network, which offers high-capacity, low-latency, nationwide connectivity to high performance computing centers, linking thousands of scientists and engineers.

Marriott International

CARL WILSON, EVP & CIO

William J. Shaw, President & COO
2007 Revenue ► \$13 billion

HOSPITALITY Marriott is in-sourcing its disaster-recovery operations, locating a new data center in a naturally cooled mine 220 feet underground, which it is leasing from data protection and storage vendor Iron Mountain. Marriott's Recovery and Development Center will allow the company to fully recover business systems within a few hours, on an as-needed basis. Unless an emergency occurs, it will use the facility for development, testing and quality assurance. The mine is a naturally cool 55 to 60 degrees Fahrenheit, so the data center will be more energy-efficient.

Massachusetts Developmental Disabilities Council

CRAIG HALL, CFO & CIO

Daniel Shannon, Executive Director
2007 Revenue ► \$1.3 million

GOVERNMENT The Massachusetts Developmental Disabilities Council deployed its DD Suite to support a partnership between councils in 36 states and to improve services for 4.5 million citizens with developmental disabilities. The DD Suite provides consistent, reliable and valid performance data to states, federal agencies and Congress. It has also made the planning and reporting process more efficient. The councils have cut their administrative costs by more than half, saving nearly \$3.5 million.



{MARRIOTT CONTINUED}

Stimulating Innovation: Meeting IT's New Mission

Business innovation results when an IT organization has a measurable impact on the corporation. But before attaining that state, many IT organizations must transform themselves.

Want to see an opportunity to drive innovation in IT and deliver business value? Look for the IT organization focused on strategic cost takeout and IT optimization.

That's one lesson learned from a recent survey¹ commissioned by BearingPoint, Inc.: 66 percent of the 150 CIO respondents said that reducing costs is a driver for innovation.

Moreover, according to the survey, IT organizations that have a sound cost-takeout strategy are more likely to rate themselves highly when it comes to driving innovation.

Cost Reduction + Innovation: The Virtuous Circle

The mission of today's IT leader has expanded to include responding to the ever changing business need of staying competitive in the global marketplace. CIOs must not only focus on optimizing how they manage, deploy and improve information technology but must also concentrate on initiatives that advance the strategic interests of the business to drive measurable value.

One strategy many implement is reducing costs and investing some of the benefits from the cost reduction into innovative ideas that will generate enhancements to the business. "Ad hoc cost takeout is often not durable," says Pierre Champigneulle, a managing director at BearingPoint, a global management and technology consulting company. "But when it results from a joint business and technology strategy, it can become sustainable and an enabler for innovation," he adds.

Successful IT leaders must develop a keen awareness of business goals so they can effectively align their IT cost-takeout strategy with the business strategy. When they achieve this, they will be able to identify non-value-added initiatives and, in turn, implement a cost-takeout strategy that decreases the costs of operations.

Cost Takeout = Collaboration = Innovation Success

When CIOs play a key strategic role in business initiatives, their IT organizations will be viewed as more effective and gain credibility. Optimizing IT through the implementation of a sound cost-takeout strategy can be

a winning combination as CIOs prove they can manage their organizations successfully, and can help the business as well.

The survey also reveals that a strong partnership between the business and IT is a requirement for stimulating innovation and creativity. Business is moving too fast for companies not to consider business goals and IT operational models simultaneously. It's important to effectively integrate operational and technology teams to advance the business and optimize IT.

Collaboration between IT and the business is critical—and a strong bond between the two is essential for the success of the business. However, such alignment is still a goal rather than an achievement for many. The survey points out that just 9 percent of respondents say they are extremely effective at maintaining collaborative relationships between IT and business groups and just 11 percent of respondents said they are extremely effective when it comes to having a commitment from IT to understanding business goals and objectives.

Vital Opportunities to "Make it Happen"

Process Optimization. The survey points to other key indicators of how cost control and innovation go hand in hand. Process standardization and automation are mentioned as one of the primary opportunities to reduce costs while bringing a superior level of service to the business and enhancing productivity.

IT Governance. Additionally, getting the right governance model in place also plays a critical role in stimulating and leveraging innovation. IT governance is of particular importance when it comes to deciding which ideas get funded and making sure that sound business cases for innovations are developed.

"CIOs are tired of cutting costs. And since the challenge of containing costs is not going away anytime soon, CIOs have an opportunity to get the benefits out of it by managing their portfolios and developing a business case for using cost savings for enterprise innovation," Champigneulle says.

¹Survey research commissioned by BearingPoint, conducted by IDG Research Services, May 2008.

Learn More
BearingPoint's CIO Business Advantage solutions help IT establish the cost controls and the collaborative foundations that allow it to align its focus with business needs and promote its services. To learn more about how BearingPoint is helping organizations stimulate innovation, go to www.CIO.com/whitepapers/BearingPoint



Management
& Technology
Consultants



Custom Solutions Group

MediSend International

JEFF DOUGLAS, CIO

Nick Hallack, President & CEO

2007 Revenue ► \$2.4 million

NONPROFIT MediSend established its Global Education Center to provide technical training and education to students from developing countries on the maintenance and repair of biomedical equipment and healthcare management. The curriculum gives more than 550 hours of hands-on experience working with and repairing equipment at MediSend's Biomedical Repair Laboratory. It uses an Adobe Flex front end that allows instructors to manage students, courses, assignments and grades, and uses a Warehouse SCM application to track, document and manage the flow and repair of equipment. The nonprofit, which ships donated medical supplies to developing nations, expects the education initiative to increase 2008 revenue to between \$3.7 million and \$4 million.

Miami-Dade County Public Schools

DEBBIE KARCHER, Executive Officer, IT Services

Rudolph Crew, Superintendent

2007 Revenue ► \$6.1 billion

EDUCATION Miami-Dade Schools implemented off-the-shelf power management software. The application enables Miami Dade's IT administrators to centrally monitor, manage and control computer power settings for 80,000 PCs across 370 sites in the school district. The district cut its monthly power costs by 47 percent, saving more than \$2 million annually.

Mid Valley Products

MIKE SKINNER, CIO

F. Jed Becker, President

2007 Revenue ► \$210 million

DISTRIBUTION The Mid Valley Distribution and Accounting System (MIDAS) supports multiple processes for distributing goods to military retail stores globally. The system, based on a service-oriented architecture, has enabled faster order processing, accelerating "speed to shelf" by more than 11 days and opening the door to expand distribution of perishable and chilled products by 38

percent. The company used the system to design and implement a novel process to forecast demand for the most perishable items using a combination of trend analysis and rapid communication of anticipated shifts in demand. The team cut the expense on spoils by more than 50 percent, paving the way to offer lower prices.

Modine Manufacturing

CHARLES GOODREMOTE, CIO

Thomas Burke, CEO

2007 Revenue ► \$1.8 billion

MANUFACTURING The company deployed an enterprise search tool for its 5,000 employees that delivers search results in hierarchical clusters. Users looking for corporate information about a topic can more easily identify the most relevant documents. They can also tease out additional information by remixing the results. The search tool is one feature of the company's global intranet, which is used daily by 90 percent of employees. The maker of heating and cooling equipment says the intranet has generated some \$3.6 million in productivity savings.

Monsanto

MARK SHOWERS, CIO

Hugh Grant, Chairman, President & CEO

2007 Revenue ► \$8.6 billion

AGRICULTURE Monsanto deployed seed-chipping technology to obtain genetic information about a plant. The technology, which integrates software with robotics, allows breeders to select seeds with desired traits before planting them, reducing field labor and land usage, and improving time to market for the company's products. Seed chipping has doubled Monsanto's genetic fingerprinting capability and improved the yield of newly bred seeds by 15 percent.

Motorola

LESLIE JONES, CIO

Greg Brown, President & CEO

2007 Revenue ► \$36.6 billion

TELECOMMUNICATIONS Motorola developed a data-centric security architecture, Enablement Zones (E-zones), which supports network connectivity for more than 65,000 individuals in 50 coun-

tries. E-zones eliminates traditional corporate firewalls and instead fine-tunes security based on the protection required for specific users and applications. This approach to security has improved compliance with Sarbanes-Oxley, general financial controls, privacy regulations and audit requirements. It also enabled deployment of more than 10,000 smartphones to access the data remotely.

MyThings

KENNETH BOUCHE, VP, Trace

Benny Arbel, CEO & Founder

2007 Revenue ► \$1 million

MANAGEMENT SERVICES MyThings launched Trace, a search engine that enables customers to locate lost or stolen belongings using image recognition. Law-enforcement officials can compare images provided by customers with images in their own databases. The company has also launched a Facebook application that allows users to circulate information about lost or stolen property to their friends, local networks and campus police. MyThings is integrating data from the 40,000 police departments in the United States, allowing local police to have direct access to Trace's image bank of stolen items.

National Rural Electric Cooperative Association

TOM STANGROOM, VP & CIO

Glenn English, CEO

2007 Revenue ► \$215 million

UTILITIES The nonprofit utility association deployed a Web portal, Cooperative.com, for employees at its member cooperatives to manage their benefits and to share data and best practices. Among its features, the site provides 124 video programs, 32 audio programs and 13 multimedia tutorials for its members. By collaborating with each other, members can more easily compete with large, for-profit utilities.

Network Services

PAUL D. ROCHE JR., CIO

R. James Alexy, CEO

2007 Revenue ► \$948 million

DISTRIBUTION To reduce its environmental impact, the paper goods, janitorial products, food-service dis-



Today's IT Leaders on Market Trends

STORAGE VIRTUALIZATION

Boost Utilization, Efficiency and Performance
While Easing Management? Done.

The digitization of all forms of data has created huge demand for enterprise storage systems and complex storage infrastructures. The volume of data created and stored each year continues to grow exponentially. Add to that the ever-increasing requirement to spend less on data storage and management while curtailing energy costs, and you've got a scenario that challenges CIOs daily.

Managing this data, which lives in complex, fragmented, often non-heterogeneous infrastructures, is a major challenge for technology executives. According to new research by IDG Research Services, 76 percent of respondents say that managing an increasing volume of data is their biggest data storage-related challenge. Ironically, the storage systems they have to help manage this data aren't all that helpful—the second-biggest storage-related challenge, according to 52 percent, is managing their complex and fragmented storage infrastructure.

How can CIOs and IT decision makers make more efficient use and ease the management of their existing storage systems? Larger companies in particular have multiple types of data stored on various devices in their data centers and at remote locations. Some data is mission-critical while some is not, and much of the data needs to be archived for compliance purposes. How can different data types be managed most efficiently and cost-effectively?

Many enterprises have concluded that virtualization can help increase storage efficiency and utilization, ease management and increase the performance of their storage systems. According to survey results, 75 percent of respondents are implementing, evaluating or piloting storage virtualization technologies.

Virtualization pools physical storage resources from multiple devices into a single virtual storage device managed from a central console. Virtualization makes it possible to integrate and manage heterogeneous components and helps ease the time-consuming tasks of backup, archiving and recovery. A comprehensive approach to storage and managing different data types while

reducing duplicate data requires multiple virtualization technologies.

Storage Virtualization: It's Not One-Size-Fits-All!

There are several ways to approach storage virtualization: seventy-five percent of survey respondents are employing virtualization to aggregate and centrally manage multiple storage devices, 54 percent are managing storage attached to virtualized servers, and 33 percent are virtualizing tape backup.

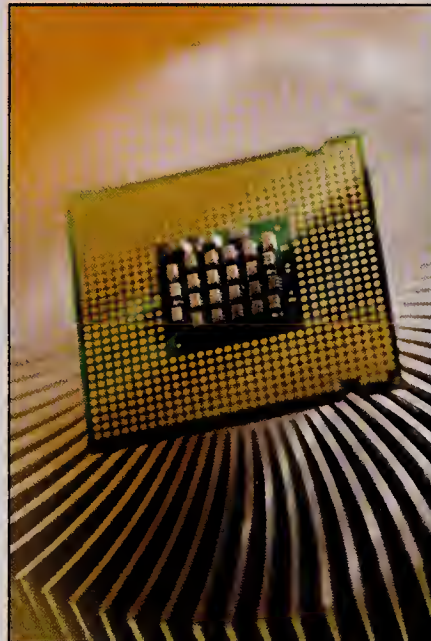
How can enterprises prioritize their virtualization initiatives and deploy technology that covers all the bases?

The answer is to work with a leading vendor that has the products, services and support to deliver a holistic approach to storage efficiency.

This goes beyond hardware-only or software-only approaches. It means working with a vendor with expertise in analyzing and assessing your environmental and business objectives, and the ability to provide desktop-to-data center virtualization. This includes servers, server virtualization, software, and a range of storage and storage virtualization options to fit the needs of enterprise customers.

About CIO2CIO:

This peer-based thought leadership program analyzes quantitative research and tests it via qualitative interviews with actual CIOs. The resulting executive insight is then disseminated via CXO's multimedia assets. To learn more about the CIO2CIO program, please contact mavery@cxo.com.



CIO₂CIO

Today's IT Leaders on Market Trends

As the needs and goals of storage virtualization initiatives vary, so too should the products and support programs offered by technology providers. Fifty percent of respondents say they're focusing on servers as part of their storage virtualization efforts, while 34 percent are focusing on tape libraries and 32 percent are implementing disk-based storage.

Virtualizing Tape for Faster Backups

For decades, tape-based storage has been the standard method used by large enterprises to back up corporate data, mainly because it is cost-effective and the stored data is portable. Technology providers have continued to invest in tape, boosting capacity and adding features. But backing up to tape is inherently slower than disk-based backups, and some consider the management of tape not worth the cost and energy savings. Fifty-one percent of survey respondents say that tape-only backups are causing them the most pain in terms of time and expense.

Virtual tape libraries (VTLs) are an ideal option for enterprises that want to retain the economies of tape storage while speeding backups and improving the management of tape-based resources. VTLs are much faster than traditional tape, so backup and restore windows are dramatically shortened. They appear to the backup application as physical libraries, which means they integrate smoothly with existing backup applications and processes.

Another benefit: Using compression and deduplication technologies, VTLs can help maximize tape cartridge usage, which cuts down on the physical number of tapes required. That feeds into an important theme among technology executives: downsizing the data center to cut space and utility expenses.

Storage Virtualization and Server Virtualization

Fifty-four percent of respondents say that the primary driver for storage virtualization is a need to manage storage attached to virtual servers. In fact, many enterprises are already virtualizing servers in support of eco- or data center efficiency programs. Virtualized servers enable applications to be moved easily from system to system, but users still need to maintain a link

to storage. In short, enterprise customers aren't lacking for storage capacity, but they need to share it more easily between systems as applications and data are moved around the IT infrastructure.

A systems provider with products that span the data center (storage, server, networking and virtualization technologies) is best equipped to help companies migrate to a more efficient virtual environment—one in which the gap between the volume of data and storage capacity is narrowed and multiple storage systems are consolidated into one manageable interface.

This is borne out in the research in which a majority of respondents—71 percent—say they're extremely likely or likely to consult a storage hardware/systems provider for help in planning and designing a storage virtualization environment.

Conclusion

Enterprise users simply want to be able to access the data they need at the moment they need it. Behind the scenes, though, multiple physical and virtual devices create a complex environment that must be efficiently and cost-effectively managed. Software-only or hardware-only vendors can't provide a complete, comprehensive technology solution, nor the breadth of expertise that enterprise customers need to develop, deploy and manage a truly efficient data center. An end-to-end approach, such as that offered through Sun Microsystems's virtualization solutions, can help enterprises consolidate systems, streamline management tasks and keep pace with data growth.

Realizing the full benefits and highest ROI of a virtualization investment requires expertise in planning and implementation, best-of-breed products and expert support that only a handful of vendors can provide. It's critical that CIOs and IT managers carefully consider technology vendors' abilities across all these issues to assure a successful virtualization initiative.

Go to www.cio.com/whitepapers/sunstorage to obtain a free download of the white paper "Storage Virtualization." Based on a major research survey by IDG Research Services, this paper draws on peer insights to help CIOs reap the benefits of storage virtualization.



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Ingersoll Rand's Industrial Technologies
Sector congratulates Tim Fleming, CIO,
and the entire sector IT team for their
outstanding contributions and dedication
to our business' success.





CPS Energy

CIO CHRISTOPHER BARRON

CEO Milton Lee

2007 Revenue ► \$1.9 billion

CPS Energy Boosts Its Bottom Line

Smartphones bridge divide between field and office workers

When CPS Energy CIO Christopher Barron looked at other companies with large mobile workforces, he saw a huge disparity in the way his business was operating.

In 2006, more than half of the utility company's 3,700 employees were field workers doing construction, excavation and other manual labor. They often had to visit work sites or customer locations to diagnose issues or implement fixes. Yet unlike other mobile workforces, just 300 CPS staffers had smartphones or other devices to communicate with colleagues, access data and do their work.

From this realization, the company's Project Magellan was born. Barron and his colleagues—the CIO is the program's lead sponsor—envisioned Magellan as a way to connect the company's traditionally siloed field workforce to the internal staff and systems they needed to work efficiently. Goals include deploying smartphones and custom mobile applications to all staffers without a laptop or other mobile device, extending the utility's networking infrastructure and building secure Wi-Fi networks in offices and warehouses. CPS expects Project Magellan to be fully implemented in 2011.

posables and packaging-products distributor redesigned its data center and disaster-recovery processes. Through the Green Network project, the company consolidated 42 servers to 12 in its primary data center, saving \$133,428 annually, and reduced the number of servers in its disaster-recovery data center from 22 to seven, reducing energy consumption. It also deployed document-imaging systems to reduce paper use.

Ohio State University Medical Center

DETLEV (HERB) SMALTZ, CIO

Steven Gabbe, SVP for Health Sciences

2007 Revenue ► \$1.4 billion

HEALTH CARE The medical center deployed Patient Throughput, a Web-based patient-tracking tool, to more efficiently manage patient visits to its outpatient clinic. The organization chose to develop a custom solution, integrated with Oracle business-intelligence tools, rather than purchase a commercial clinic management system that lacked comprehensive BI capabilities. The average time it takes to check in patients and get them ready to see their doctors has improved 24 percent, and the organization is saving tens of thousands of dollars annually due to increased efficiency.

OhioHealth

MICHAEL KROUSE, SVP & CIO

David Blom, CEO

2007 Revenue ► \$1.8 billion

HEALTH CARE OhioHealth completed a two-year, \$150 million project to construct a new, digital acute-care hospital in Dublin, Ohio, a rapidly growing suburb of Columbus. The hospital uses 38 clinical systems, including computerized physician order entry, via a physician portal, along with a host of financial, business and operational systems. The \$25 million spent to standardize information systems will provide maximum efficiency and effectiveness for physicians, associates and the organization, improving data sharing, facilitating floating staff among hospitals, streamlining

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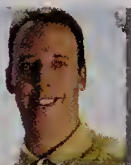
Today, more than half of the workforce has BlackBerry or Windows Mobile devices and access to corporate data. CPS staff employ their smartphones in innovative ways: as digital cameras at work sites, as emergency notification receivers and as GPS tracking mechanisms. For instance, a worker can now visit a site, photograph damaged equipment and send it back to the office. An expert there diagnoses the issue and sends instructions to fix the problem or dispatches the appropriate worker—who's available immediately via voice, e-mail and SMS text via smartphone. In the past, this process might involve multiple workers and take days. By streamlining communications and improving productivity, Magellan has been a key enabler in helping the company cut its workforce by 9 percent in 18 months, mostly through attrition with no loss in productivity. CPS has spent approximately \$1 million on the Magellan program. Most smartphone-related investments have been dedicated to infrastructure and application-development fees. Still, Barron says, the cost of keeping smartphones up and running is a mere tenth of maintaining a PC.

The company has also seen gains in supply chain efficiency related to Magellan and the smartphone deployment, he says. Previously, a specific person or group needed to be onsite to approve orders. Now approvers can be anywhere there's cellular coverage. The company's supply chain buyers can also visit the warehouses to work with staff who order parts, leading to faster order times and more proactive supply chain management overall. In just one year, the time it takes to close purchasing and procurement deals decreased by more than 65 percent. Also, inventory levels were reduced by more than \$6 million since the project began and supply chain cycle times have been reduced by 67,000 procurement days per year.

Customer satisfaction levels are up now that staffers have access to corporate systems and data and can respond to service calls more efficiently. In fact, the company received the highest score in J.D. Power and Associates' 2007 "Gas Utility Residential Customer Satisfaction Survey."

—Al Sacco

CIO.com Staff Writer Al Sacco can be reached at asacco@cio.com. To read a longer version or to comment on this article, go to www.cio.com/article/433863.



{CPS CONTINUED}

system upgrades and support, providing consistency for staff and patients, and improving patient safety.

Pacific Gas and Electric

PATRICIA LAWICKI, SVP & CIO
Bill Morrow, President & CEO
2007 Revenue ► \$13.2 billion

UTILITIES Pacific Gas and Electric has deployed 240,000 SmartMeter gas and electric meters, with plans to install 1.3 million additional meters this year. The devices allow the company to read meters hourly or daily and charge customers according to their level of

demand. PG&E is using two network technologies to transmit data: a radio-frequency network for gas meters and a power-line carrier system network for electric meters.

Pacific Northwest National Laboratory

JERRY JOHNSON, CIO
Michael Kluse, Laboratory Director
2007 Revenue ► \$761 million

GOVERNMENT The U.S. Department of Energy lab's IT services and safeguards and security groups deployed a campus security system consisting of 81 cameras

and 14 emergency call stations on a wireless mesh network. The lab's operations center receives the camera and emergency call-station signals after they are routed through network security systems designed to detect and prevent unauthorized activities. Using the wireless mesh technology saved the organization an estimated \$5 million.

Pitney Bowes

GREGORY BUONCONTRI, SVP & CIO
Murray Martin, President & CEO
2007 Revenue ► \$6.1 billion

BUSINESS SERVICES Pitney Bowes deployed Antenna Software's Antenna Mobility Platform to deliver customer data, work orders and other business information to field service technicians on mobile devices. Among its benefits, the system has reduced inventory levels by 22 percent through better information about the parts needed to service the company's mailing equipment.

Polycom

GLENN NOGA, CIO
Robert Hagerty, CEO
2007 Revenue ► \$930 million

TELECOMMUNICATIONS Polycom deployed a global IP network to handle company's voice, video and data traffic. The company implemented rules for determining traffic priority and quality of service, giving preference to video and voice-over data. The provider of teleconferencing and video-conferencing technology says its network management approach has helped increase sales by improving the quality of its product demonstrations. Meanwhile, the network improvements have increased internal collaboration, improving productivity 8 percent over three years.

PricewaterhouseCoopers

STUART FULTON, U.S. CIO
Dennis Nally, U.S. Firm Chairman & Senior Partner
2007 Revenue ► \$7.5 billion

FINANCIAL SERVICES The consultancy implemented a voice-over-IP network, which it calls Convergence, to support nearly 32,000 of its U.S.-based partners and staff. Among its capabili-

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ties, the network allows incoming calls to ring simultaneously on employees' desk and cell phones and enables them to switch calls between the two without losing the connection. Employees can also receive voice-mail notifications via e-mail. The company claims its VoIP deployment is among the largest to date. The project has allowed the organization to avoid costs equivalent to 1 percent of its IT budget this year.

RBC

MARTIN LIPPERT, Vice Chairman & Group Head, Global Technology & Operations*

Gordon Nixon, President & CEO
2007 Revenue ► \$22.9 billion

FINANCIAL SERVICES RBC's Wireless Road Advisor enables the company to dispatch adjusters more quickly to investigate customers' home and auto insurance claims and provides the adjusters with wireless access to critical claims data, via a network card slotted into their laptops. The system, which RBC says is the first of its kind in Canada, has increased the average number of daily assignments handled by adjusters from 3.6 to 5.6, for a total five-year cost savings of \$9.6 million.

*On July 3, 2008, Lippert was named CIO and Corporate Operations and Technology Chief Operating Officer of Citi.

Reliance Retail

TIMOTHY D. KASBE, CIO

Manoj Modi, CEO
2007 Revenue ► N/A

RETAIL The three-year-old Mumbai-based retailer deployed end-to-end systems, including point-of-sale, merchandising, warehouse management, procurement and business-intelligence applications for 511 stores, 18 distribution centers and 32 collection centers across India. Among the technologies the company has deployed is a system for processing job applications on a mobile device.

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You can sort the list of honorees by industry, location and technology using our 2008 CIO 100 WINNERS DATABASE at www.cio.com/cio100/2008/1.

CIO.com

Sappi Fine Paper North America

ROBERT WITTSTEIN, VP of Procurement & CIO

Mark Gardner, President & CEO
2007 Revenue ► \$1.5 billion

MANUFACTURING Sappi developed a knowledge management system to control the more than \$600 million it spends on raw materials. The company integrated data from a variety of systems, including plant floor control, mill execution and ERP, providing a single view of costs and material usage. The paper manufacturer developed a custom Microsoft .Net-based program to merge the data from the multiple systems. Users can now view which jobs are currently running on a paper machine at any given time and which are planned, enabling them to adjust the product mix dynamically. The system has helped the company generate an additional \$3 million in operating income.

Schwan Food

KATHLEEN McNULTY, SVP of Information Services & CIO

Greg Flack, President & CEO
2007 Revenue ► \$3.5 billion

MANUFACTURING Schwan is virtualizing 45 percent of its servers and one-third of its corporate desktops and laptops. The company saved \$900,000 by eliminating the need to purchase more than 100 servers. The food supplier also extended the life of four-year-old desktops by converting them into thin-client devices, saving \$1.5 million. In addition, the company reduced its electricity bills by more than \$9,700 per month.

Sentara Healthcare

BERT REESE, CIO

David Bernd, CEO
2007 Revenue ► \$2.4 billion

HEALTH CARE Sentara Healthcare deployed its wireless phone project to improve communication in its hospitals, where staff is often widely dispersed and not always near a phone or PC. The wireless phones are integrated with the nurse call system, so that when a patient presses his nurse call button, the caregiver's phone rings. Patient rooms are also

set up to enable monitoring equipment to send alerts directly to caregivers' phones. The \$1.5 million project makes use of the hospital system's 802.11 wireless infrastructure. The project is expected to pay for itself within two years.

Seton Healthcare Network

GERRY LEWIS, CIO

Charles Barnett, CEO
2007 Revenue ► \$1.1 billion

HEALTH CARE Seton Healthcare Network is virtualizing desktops, so that clinical users can access their desktop, documents and applications, and be able to print from wherever they are located. When users switch machines, they can automatically link back to their existing session in less than 5 seconds. The healthcare provider has reduced the time it takes to load applications by 30 minutes a day, which means clinicians save time. The organization expects to save \$304,000 in PC management costs over six years.

Shook, Hardy & Bacon

JOHN ANDERSON, CIO

William Johnsmeyer, COO
2007 Revenue ► \$316 million

LEGAL The law firm redesigned its corporate portal, CityLink, to support an integrated, collaborative work environment. The portal provides tools, including shared calendars, RSS news feeds, blogs and wikis, along with links to internal websites and client-oriented extranets. CityLink uses Microsoft's SharePoint to integrate a variety of corporate data repositories ranging from human resources and accounting information to client records and litigation support databases.

Sirva

ERIK KELLER, CIO

Robert W. Tieken, President & CEO
2007 Revenue ► \$3.9 billion

TRANSPORTATION The relocation-services provider deployed a business-intelligence tool, Inside Performance Management (iPM), which enables the company to benchmark agent performance and enforce a common set of goals. The company uses iPM to define

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goals and determine key performance indicators. Agents can use a portal to create individual action plans or reference and submit best practices. The company anticipates an increase of more than \$1 million in profit by 2011.

Skanska USA Building

KEVIN HUTCHINSON, SVP, IT

Michael McNally, President & CEO

2007 Revenue ► \$4 billion

CONSTRUCTION Skanska deployed a Web-based application, Skanska Team Environmental Management System (STEMS), to manage environmental impacts at every Skanska jobsite and corporate office. The system is used to monitor and document all activities that relate to the environmental impact of a project and improve decision making. The company estimates that the system,

which was deployed in September 2007, will save 4,200 hours of electricity, 7,000 gallons of water, 60 pounds of air pollution and 17 trees each year.

Southern Company

BECKY BLALOCK, SVP & CIO

David Ratcliffe, President & CEO

2007 Revenue ► \$15.4 billion

UTILITIES Southern Company has deployed more than 260,000 Smart Meters to automate several labor-intensive processes and improve customer satisfaction through more frequent, accurate and consistent wireless meter readings. Subsidiary Georgia Power has been able to reduce travel by its field service representatives some 38,000 miles per month, reducing truck emissions.

Spiegel Brands

TOM SCOTT, CIO & SVP of Operations

Geralynn Madonna, CEO

2007 Revenue ► \$250 million

RETAIL Spiegel Brands deployed guided interactive voice-response technology, eliminating the need for customers to navigate menus when contacting a call center. The system features a humanlike virtual agent, who asks callers, "How may I help you?" and directs the call based on what the caller says. A human guide is able to interact with the IVR, helping it understand exactly what the customer says. The company completes calls successfully 70 percent of the time within the IVR, compared with the industry average of 30 percent. Meanwhile, Spiegel Brands has reduced by 20 seconds the average time it takes to handle a call.



Goodwin Procter Makes Strong Case for KM

Integrates data using SharePoint

If anyone knows that time is money, it's an attorney. The 850 attorneys and their staffs at Goodwin Procter were spending too much time assembling documents and looking up information, which meant cases took more time than they should to proceed.

The \$611 million law firm's eight offices used seven different applications to manage more than 2 terabytes of data for Goodwin Procter's more than 60,000 cases—close to 10 million documents.

Goodwin Procter

CIO PETER LANE

CEO Regina Pisa

2007 Revenue ► \$611 million

{GOODWIN PROCTER CONTINUED ON PAGE 60} ►►

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Consolidation is Just the Starting Point

HP's Vision for Virtualization: Seamless Integration

Jeff Carlat

DIRECTOR OF ESS SOFTWARE MARKETING, HEWLETT-PACKARD
JEFF IS DIRECTOR OF HP'S ENTERPRISE STORAGE & SERVERS (ESS) SOFTWARE MARKETING AND HAS BEEN WITH HP/COMPAQ FOR 11 YEARS. HE HAS SERVED IN VARIOUS POSITIONS, INCLUDING PLATFORM PRODUCT MARKETING AND BUSINESS OPERATIONS FOR BOTH SERVERS AND STORAGE.

Virtualization is moving into the mainstream—fast. According to IDC, more than half of all server virtualization customers deploy virtualization in production, and one quarter of production applications run on virtual machines—a figure that will increase to 50 percent within the next 12 months. With virtualization becoming

Our strategy is to innovate; to seamlessly integrate virtualization as an extension of the physical world.

pervasive, IT departments are looking to seamlessly manage their physical and virtual environments. CIO spoke with Jeff Carlat, HP's director of marketing for Enterprise Servers and Storage Software, about HP's integrated solutions that help CIOs manage virtualization from the desktop to the data center.

What is HP's strategy for virtualization on ProLiant servers?

Our strategy is to innovate; to seamlessly integrate virtualization as an extension of the physical world. We call this ProLiant iVirtualization. iVirtualization leverages core ProLiant technologies like Integrated Lights-Out to extend the ProLiant experience into the virtual world. This allows easier and faster out-of-the-box server configuration and setup, and can save IT valuable time.

At HP, virtualization means much more than just consolidation and virtual machines. There are several components to

our strategy. We start with the virtualized server, including iVirtualization, then link it into the broader infrastructure through Virtual Fabric and storage, manage the unified infrastructure, tie it into broader IT with business technology optimization software, and leverage our partners and the third-party ecosystem.

A growing solution is virtual desktops. The benefits of virtual desktops include power efficiency, security and fewer desk-side service calls. We offer remote-client solutions that span the needs of light users to power users. The breadth of HP's portfolio enables us to deliver all the components—clients, interconnect software, management software, servers and services—all backed by HP.

How has customer demand shaped HP's offerings for virtualization?

We thrive on feedback to shape the direction of our technology. As customers put more workloads on a given server, the reliability and availability of that hardware becomes more critical. For customers that use virtualization for their production environments, it's critical to integrate the management of both the physical and virtual servers. Customers told us they want to efficiently manage their environments and reduce the acquisition cost of servers, so we applied our unique management

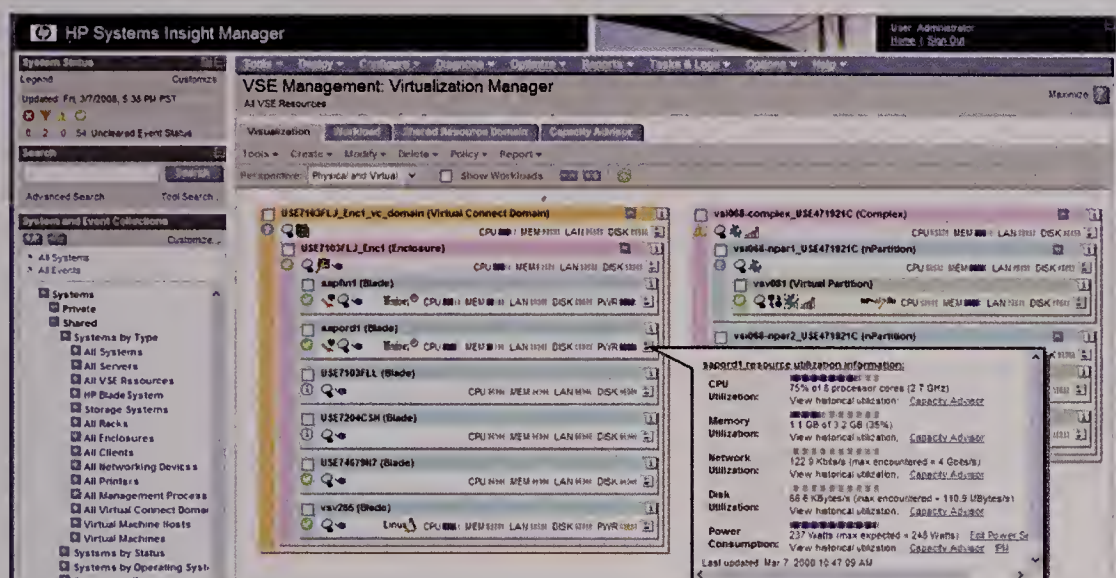
tools to help them do that. For example, HP Insight Dynamics-VSE is management software that continuously analyzes and optimizes the physical and virtual infrastructure. It offers real-time capacity planning that analyzes server capacity and power based on thousands of infrastructure data points, and lets administrators manage virtual and physical resources the same way.

How important is integration with other vendors' solutions to the success of a virtualization implementation?

HP's virtualization solutions depend heavily on third parties, so integrating with them is a given. For example, we have been working closely with Microsoft for more than 20 years—our engineering and development teams are linked at the hip. The same goes for our partnerships with VMware and Citrix. We partner across the ecosystem, with a focus on ensuring the virtualization solution runs best on our ProLiant servers.

How do you build the business case for your virtualization solutions?

Business value comes in four significant areas: ROI, server-to-administrator ratios, power savings, and Service Level Agreements (SLAs) or uptime. In terms of ROI, there is tremendous underutilization of server and desktop resources. IDC estimates that less than 10 percent of total server capacity is utilized over a period of weeks or months. This translates to roughly \$140 billion of server capacity sit-



HP INSIGHT DYNAMICS - VSE PROVIDES DETAILED CONFIGURATION AND UTILIZATION INFORMATION AT A GLANCE.

ting idle. Consolidating seven to 10 servers into one reduces infrastructure spend, requires less footprint and extends the life of existing data centers. IDC also suggests that in the physical world, organizations employ one IT professional for every 20 to 30 servers. With virtualization, the ratio increases to one IT professional for 60 to 100 virtual machines. And today it costs as much to power and cool servers as it costs to acquire them. Virtualization can cut facility costs by 20 percent to 35 percent.

Virtualization also provides the ability to use virtual machines for disaster recovery and increased IT agility. A virtual server is like a file that can be moved, copied, backed up and replicated, enabling live migrations—moving a live, running virtual machine with an operating system and applications from one host to another.

How does HP's approach to the components of a virtualization solution—platform, servers, management software, applications, etc.—differ from the competition's?

Our approach is to innovate in R&D, extend the ProLiant experience to the virtual world, engage with partners to bring technologies to market, and create services capabilities from consulting, integration and support. This level of innovation across the value chain is unmatched by other server providers. It's important to IT decision makers because it demonstrates HP's commitment to solving the pain points

of data centers, such as reducing the time required to manage the infrastructure.

John Humphreys, of IDC's Enterprise Platform Group, says mobility will be the defining feature that will move virtualization beyond just a tool for consolidation. Do you agree?

The ability to move virtual machines is key to increasing uptime and flexibility, and is why disaster recovery and virtual desktop infrastructure are major reasons customers are implementing virtualization now.

It costs as much to power and cool servers as it costs to acquire them. Virtualization can cut facility costs by 20 percent to 35 percent.

HP sees this fluidity as enabling the move toward the adaptive infrastructure and the data center of the future. Already we can initiate live migrations based on policy and pre-failure alerts. This is evolving into data centers that will continuously optimize servers based on utilization, performance, security and energy use.

IDC believes the next wave of virtualization adoption will center on mitigating the problems and costs associated with system downtime. How does HP address this concern?

Reducing downtime is indeed a key attribute of virtualization. This aspect has been a hallmark of HP ProLiant servers—the

redundancy, pre-failure alerting and other server-based innovations have delivered the most robust server in the x86 market. This infrastructure availability extends [to virtualization] through the ability to perform live migrations – without shutting down the system -- as well as optimize the infrastructure based on performance or power characteristics. For instance, the HP Systems Insight Manager is integrated to work with VMware Virtual Center.

What can customers look for in the coming months with respect to virtualization from HP?

HP is aggressively expanding its presence in virtualization. There will be innovation with our partners including Microsoft, VMware and Citrix. Expect compelling solutions for VDI and remote-client solutions. New server technologies related to processor, memory, I/O, redundancy and serviceability will continue to evolve, allowing more workloads in virtual machines on a given server, and hence increasing ROI. There will also be much more innovation on the management front, allowing for better management of heterogeneous environments. And there

will be more shared storage options and incorporation of best-in-class HP StorageWorks solutions into virtual architectures.

FOR MORE INFORMATION:

Download a copy of the HP white paper titled **"Business Value of Virtualization: Realizing the Benefits of Integrated Solutions"** at www.cio.com/whitepapers/hp-virtual Further information may be found at www.hp.com



Custom Solutions Group

CIO Peter Lane wanted to integrate the data. Using Microsoft SharePoint, his team created the Matter Page System as a hub through which attorneys could access business data and client information. What's more, the firm has been able to use the platform to profile cases, and share notes and work in progress. Now attorneys can easily find colleagues to help them with similar cases.

Matter Pages took a year to implement, and once it was deployed, it immediately changed how Goodwin Procter's attorneys work. When the attorneys assemble documents for a client's case, the data comes from, among other systems, an Interwoven document management system, an Interaction CRM system and Lexis-Nexis. When a client called with a question, finding the answer meant launching more than one application and looking up the data in different systems. Attorneys needed contact information, documents, billing information and more. The process sometimes took hours.

But all the information had two things in common, says Andrew Kawa, Goodwin Procter's development manager, who leads its system development efforts: "Everything is based on the client number and the matter number." ("Matter" is a term that describes all the facets of a case.) The matter numbers provided the key to integrating the data through SharePoint. SharePoint is used to build a set of webpages within the Goodwin Procter intranet based on the selected matter number. Once a user selects a matter, the pages with the relevant data are dynamically generated and accessed via a tabbed menu. Each tab represents integration with one of Goodwin Procter's corporate applications.

Now, "instead of having to launch the different systems from the desktop, or the Web interface, or [open] the document management system, we were able to pull all of this information into a one-stop-shop view for the users in our company," Kawa says.

The system increases efficiency for the attorneys because they can find previous matters they or others have worked on and gain extra information much faster than before. They spend less time researching and more time moving a case forward.

Lane chose SharePoint because Goodwin Procter is a Microsoft shop; the firm uses Microsoft's .Net framework to develop its custom software and build its Web applications (using Microsoft's ASP.Net Web development platform). "It gave us the most amount of flexibility to leverage our existing investment in custom code and the .Net framework that we had already made, in addition to providing future development capabilities," says Kawa.

Matter Pages' initial success has Lane investigating new SharePoint features, such as wikis and blogs. "One of the IT goals is to take advantage of the new technology as it becomes available," Lane adds.

With that goal in mind, says Lane, the Matter Page System won't ever truly be completed. "I don't think we will ever declare the project done or say we don't have to put any more time or effort in," he says.

—Jarina D'Auria

Editorial assistant Jarina D'Auria can be reached at jdauria@cio.com. To read a longer version or to comment on this article, go to www.cio.com/article/440726.



{GOODWIN PROCTER CONTINUED}

Sprint Nextel

DICK LEFAVE, CIO

Dan Hesse, President & CEO

2007 Revenue ► \$40.1 billion

TELECOMMUNICATIONS Sprint Nextel incorporated virtualization into its Simplicity, Speed, Standards, Stability (4S) project to streamline deployment of new test and development environments. The project is a server and storage farm: The company can deploy a three-tier server environment (consisting of three servers representing a database system, applications and Web environments, along with terabytes of storage) within 15 minutes. Sprint Nextel has cut equipment and software licensing costs in half and is currently applying the new architecture to provisioning production environments.

St. John's University

JOSEPH TUFANO, VP & CIO

James Pellow, EVP & COO

2007 Revenue ► N/A

EDUCATION St. John's University used business process management tools to automate workflow, document imaging and the application process in admissions and financial aid. The new automated workflow will improve processing speeds, turnaround times, auditing, tracking and data-verification capabilities, as well as reduce handling and use of paper. The Banner Xtender module from SunGard imports all images into the system and uses an Oracle tool, Apex, to import data and index information. Applied to the admissions process, this allowed the university to process a record 38,437 applications for the fall semester 2008, compared with 20,000 in 2005.

State of Alabama

JIM BURNS, CIO

Bob Riley, Governor

2007 Revenue ► \$17.5 billion

GOVERNMENT The state of Alabama deployed many systems to improve e-government services delivered to citizens of Alabama in the areas of education, business transactions and Alabama government operation. The projects implemented as part of Gov. Bob Riley's "Plan for Change" include GIS technology for viewing a virtual Ala-

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bama and getting infrastructure data in a visualization tool networking and video-conferencing technology for distance learning and 130 online e-government services delivered through the Alabama.gov portal. Among the benefits, in 2007, 64 percent of home-builder licenses were renewed online with the Alabama Home Builders Licensure Board. In June 2007, the Alabama Department of Revenue had 336 users file for tax extensions online, which resulted in payments totaling more than \$7.2 million, compared with 49 users filing \$804,000 in payments in 2006.

State University and Community College System of Tennessee

THOMAS S. DANFORD, CIO

Charles Manning, Chancellor
2007 Revenue ► \$2.2 billion

EDUCATION The State University and Community College System of Tennessee replaced its legacy administration system with SunGard Higher Education's Banner administrative system. The project provides self-service applications, student support, data sharing, analysis and decision support at 19 institutions across the state. The organization used the shared self-help rapid implementation methodology to train IT staff how to implement, operate and maintain the new system, saving \$13 million in implementation costs. The project included deployment of an Oracle ERP system, providing online access for students, many of whom are older individuals going back to college, to register and perform other transactions.

SunTrust Enterprise Information Services

TIM SULLIVAN, Corporate EVP & CIO

James Wells, President & CEO
2007 Revenue ► N/A

FINANCIAL SERVICES SunTrust partnered with member banks to implement an image-based check-processing system to support Check 21, a law that allows banks to exchange checks electronically, rather than send paper back and forth. SunTrust uses Viewpointe Archive Services for the storage, retrieval and sharing of check images with partner banks, and ImageShare to share these images with exchange partners. In 2007,

SunTrust saved nearly \$2.1 million for incoming cash letters (groups of checks with processing instructions), \$2.4 million for float, and \$500,535 in fees and transportation savings.

SuperShuttle

MIKE HOGAN, CIO

Brian Wier, CEO
2007 Revenue ► \$120 million

TRANSPORTATION SuperShuttle, which provides transportation to and from airports, took advantage of the GPS capability of mobile phones to enable the dispatch of the closest available driver to each job. Drivers have the ability to accept or reject assignments, view passenger pickup or drop-off details, look up directions and record expenses, among other functions. The application can be used offline in the event that necessary data is queued when it cannot be sent because a user is outside his network; then when a connection is detected, the data can be automatically transmitted.

Texas Health Resources

EDWARD MARX, SVP & CIO

Doug Hawthorne, CEO
2007 Revenue ► \$2.2 billion

HEALTH CARE Texas Health Resources used rapid application development techniques to deploy a Web-based application, the Safety Action Learning Tool, which captures and analyzes data related to patient safety. The healthcare provider's more than 21,000 workforce members can input incident information, which is routed to managers for follow-up action. Managers can use the information, which has links to additional data about patients, employees and medication, to improve processes. Employees can file reports 75 percent faster, and reporting of incidents has increased as much as 40 percent.

Toyota Canada

HAO TIEN, Director & CIO

Yochi Tomihara, President & CEO
2007 Revenue ► \$6 billion

TRANSPORTATION Toyota Canada implemented a program to improve customer service using a new customer case management system. The system

tracks customer information, including product ownership, service history and complaints. Dealers, manufacturing operations, the financing company and customers all have access to the system through an appropriate portal. When a customer complains about a service issue at the dealership, the dealer uses the system to log the event and alerts Toyota's customer interaction center (CIC). If the customer later calls the CIC and if the complaint is related to a vehicle problem, the call-center representative can call up the customer's vehicle service history and assess the problem. Among the results: The company has reduced by as much as 20 percent the time it takes to investigate customer problems, as well as the need for follow-up calls.

Tucson Electric Power

STEVE RISSLER, Manager, IS

James Pignatelli, Chairman, President & CEO
2007 Revenue ► \$1.1 billion

UTILITIES Tucson Electric Power reinvented its data center, using VMware to virtualize 95 percent of its Windows-based servers. To manage backups for disaster recovery, the utility created a script using Symantec's NetBackup to take a snapshot of a volume comprising between four and six virtual machines. The company then used SnapVault to send a read-only copy of the data over 1Gbps fiber to the primary disaster-recovery site. The organization has reduced the time it takes for backup and recovery and avoided purchasing additional NetBackup licenses and a server. In addition, it no longer has to wait to schedule backups during off-hours. The innovative use of SnapVault for NetBackup scripts resulted in a savings of \$200,000.

U.S. Department of Housing and Urban Development

LYNN ALLEN, Deputy CIO for Business & IT Modernization

Steve Preston, Secretary
2007 Budget ► \$33.6 billion

GOVERNMENT HUD deployed the National Housing Locator System (NHLS), a Web-based system that allows federal, state and local agencies to rapidly find available housing for people displaced from their homes by a natural

excellence.*

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*connectedthinking

PRICEWATERHOUSECOOPERS 

**Vanguard****CIO PAUL HELLER**

CEO John Brennan

2007 Revenue ► \$2.1 billion

In the Multimedia **Vanguard**

Mutual fund company uses Web 2.0 technology to help customers invest better

A **lmost 10 years ago**, Vanguard's IT team looked at emerging multimedia and content sharing tools on the Web and saw a future gold mine for customers. The mutual fund company, which holds \$1.3 trillion in assets, considers a key part of its value proposition to be educational materials that help customers make better investment choices. Multimedia offered yet another way to keep customers interested in and educated about the financial markets.

By 2006, online multimedia such as iTunes and YouTube had exploded in popularity, RSS feeds for subscribing to Web content were proliferating and Vanguard plunged in. The company revamped its website, enabling customers to personalize their experience online. It also deployed a plat-

How to navigate through an era of change



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BY SAMUEL
GREENGARD

PRICEWATERHOUSECOOPERS



It's no secret that globalization and the rapid rate of change companies now face have forever altered the business landscape.

Yet, as many organizations have learned over the past decade, achieving successful results in this new landscape often proves elusive. One continuing challenge is the integration of IT and non-IT processes and how an organization manages them as a single cohesive system. This integration represents a significant change in operations and a redefinition of business models, strategies, products and approaches in order to create a process-oriented enterprise.

However, instead of a specific catalyst, such as Y2K or the need to adopt more advanced enterprise hardware or software, the driver today is the continuous and accelerating nature of change itself. Remaining competitive isn't an afterthought; it's the primary consideration.

Whereas a decade ago organizations typically viewed enterprise transformation as a short-term, tactical process—one in which they defined requirements, designed a solution, implemented the change and then retired the project (even if the process took months or years)—this mindset is no longer viable. All too often, today's leading edge product or solution is tomorrow's relic.

The evidence is everywhere. Consider this: A company on the annual Fortune 500 list in 1980 had a 56 percent chance of remaining on it in 1994. However, an organization on the Fortune 500 list in 1994 had only a 30 percent chance of staying on it in 2007. This raises some key questions. How does relentless change redefine the nature of management and the structure of an enterprise? What role should information technology play in reshaping the enterprise? And how can an enterprise achieve agility without stretching its money and resources too thin?

Companies must respond to the increasing pace of change with agile management, more sophisticated approaches to managing IT complexity and devolved leadership. The key, successful C-level executives recognize, is to connect information technology and business strategy effectively, using a combination of new tools and time-tested techniques. Only then can an enterprise sustain performance in a rapidly changing environment.

Discovering Agility

As organizations confront enormous cost pressures, the need to make decisions quickly—and the ability to manage data, information and knowledge for strategic gain—is vital. What's

needed today is the ability to move power and authority from the center of the organization to the edge. Information flow, once the domain of middle management, now falls squarely on the shoulders of IT. Business decision makers and IT executives need to embrace a more agile and flexible approach to getting things done—and they must do so with compressed technology adoption cycles and business strategies.

Achieving superior results isn't easy. Building an agile infrastructure takes discipline and creativity. The one thing that's essential, however, is to explicitly determine which processes to standardize and which to leave flexible in order to ratchet up the value-creation equation. How an organization approaches agility and flexibility goes a long way toward achieving success. Ideally, an enterprise can deal with both present needs—such as customizing products and solutions—while adapting to disruptive scenarios as they unfold.

Flexibility and agility aren't a given, even with a well-designed plan and clearly defined strategies. Management itself must be agile and the entire workforce must be allowed to think quickly and assertively.

Current technology can empower managers to modify business processes as business situations—and the basic context of interactions—change. Ultimately, an initiative must improve the management of IT resources, optimize how complexity is managed, leverage leading edge capabilities such as social networking and Web 2.0, and adopt more efficient business performance platforms. Properly designed, this approach enables agile enterprise management and spurs the development of new business models, organizational designs and competitive responses.

Make no mistake: Managing continuous change and grappling with technology trends are key business drivers for the 21st century. By improving IT and complexity management, leveraging Web 2.0 capabilities and adopting more comprehensive business performance platforms, an organization can undergo a significant transformation.

An agile business model moves from the abstract to the real and spurs the development of new ideas, organizational designs and competitive responses. Moreover, decision-making cycles are compressed while results are improved.

An Intelligent Business Performance Platform Takes Hold

A hypothetical example can illustrate how this might work in practice. Fluid Nozzles, a \$3 billion aerospace supplier, is finalizing the integration of a \$1 billion acquisition while managing a joint venture opportunity with a Chinese firm, and coping with a patent infringement claim that could cost the firm upwards of \$500 million. For Fluid Nozzles, agility isn't just a concept—it's something they must handle every day of the week.

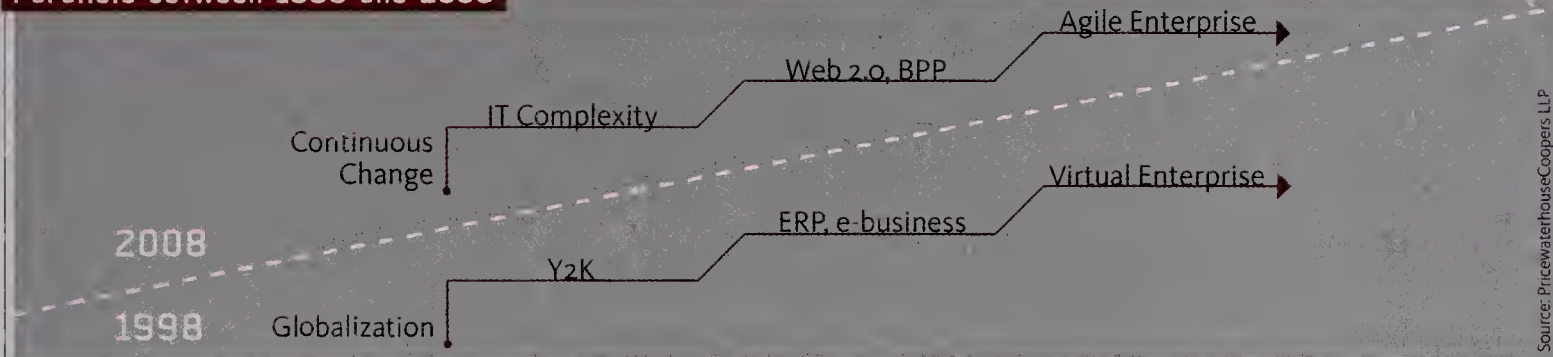
Fluid Nozzles' executives must manage internal communication and ensure that documents, ideas, analysis and decision-making are all up to date. Moreover, the firm must understand revenue sharing and have information about partners at the tips of its managers' fingers. As a result, the company has devised FluidFaceBook, an internal social networking application that uses mashups and other Web 2.0 technology to connect the enterprise in ways that wouldn't have been imaginable only a few years ago. Combined with videoconferencing, it gives Fluid Nozzles the ability to make highly informed decisions on the fly.

Like Fluid Nozzles, companies that want to stay competitive in today's dynamic business environment need to discard the traditional top-heavy command-and-control management structure. The reason is clear and simple: There are so many factors in play that moving slowly extracts a huge price. The challenges companies face include: huge volumes of information to analyze; countless pricing, positioning, and other product strategy decisions to make; and swarms of competitors to understand and address. The decision-making process no longer falls



In order to achieve enterprise agility, management itself must be agile and the entire workforce must be allowed to think quickly and assertively.

Parallels between 1998 and 2008



Source: PricewaterhouseCoopers LLP

within the strict domain of the executive suite. Business managers and others on the front lines must act—and react—without delay. Simply put, these individuals must be allowed to embrace power, authority, and accountability in order for the enterprise to become more responsive.

Information technology makes its presence felt as a means to an end for enterprise transformation. Too often, however, existing business processes, research tools, analytics solutions and information consolidation systems do not scale up to support scores of newly empowered business unit leaders. In order to succeed, executives must grasp the nature of continuous business change, how successful agile enterprises respond and what it takes to be an agile enterprise.

The enterprise needs to focus on three primary areas:

Building intelligent business performance platforms. The first piece of the puzzle is to assess and align business processes and build an intelligent business performance platform. Anything less—particularly poorly defined business objectives—is a demonstrated model for failure. An organization's business group must define the responsibilities and capabilities for an agile and distributed organization, and one that is also focused on compliance. A successful initiative remediates complexity while introducing a more capable business support model.

Once an enterprise is able to monitor and manage critical business processes and outcomes, it is in a position to prioritize and adapt to change—and transform IT management into enterprise management. An intelligent business platform typically encompasses business intelligence, business process management, and business rules management. The goal is to build a platform that enhances dynamic, knowledge-driven processes rather than low-level transactions. Merger integration, strategy management, budgeting, enterprise risk management, governance and compliance are among the areas that can benefit from this approach.

Realizing the full benefit of these systems means executing policies automatically, rapidly and consistently—thus allowing staff to focus on creative solutions for exceptional circumstances. The best business performance management (BPM) platforms combine centrally created business analytics services, business process analysis tools, business process design, execution, monitoring capability and business rules engines.

Managing IT complexity. An intelligent business platform is dependent on efficient IT systems that create opportunities. Emerging strategies such as server and storage virtualization, consolidation, and service oriented architectures (SOAs) that build on reusable software components are at the heart of a more streamlined IT department—and a more robust and responsive enterprise. These technologies allow IT managers and administrators to reduce, and sometimes eliminate, rote tasks while boosting their strategic value. Although IT management has never been a simple proposition, the challenges of the last few years—including tight budgets, mergers and acquisitions, and employing new tools ranging from wireless to remote IT deployments—have ratcheted up the stakes.

The complexity of today's IT world isn't about to subside. New and more sophisticated generations of technology lie just around the corner. The key for enterprises is to move from a

➤ Once an enterprise is able to monitor and manage critical business processes and outcomes, it is in a position to prioritize and adapt to change.

position of IT complexity remediation to ongoing complexity management. This demands an explicit plan for sampling, adjusting, promoting and standardizing on innovative systems. As organizations find themselves drifting closer to the tipping point for adopting management systems, they must measure agility in terms of return on IT investment (just as time-to-market is crucial in a business case).

With a clear enterprise IT management strategy in place, companies can adopt innovative and beneficial technologies such as Web 2.0 and SOA. What's more, they can slice through all the complexity and understand their business and IT practices in ways that weren't possible in the past. They can identify unnecessary processes and eliminate many of the inefficiencies of existing systems, business processes, and workflow. This intelligent business performance platform (IBPP) can, in the end, transform an organization from reactive to proactive.

Leveraging enterprise Web 2.0 tools. As the Fluid Nozzle example illustrates, no technology trend has had such a great impact on the informal business organization as Web 2.0. Blogs, wikis, social networking, tagging, mashups and folksonomies have dramatically changed the face of human interaction—and the nature of business. These tools facilitate cultural change by enabling more open, multiperson conversations across the enterprise and beyond. Ultimately, they help address two significant challenges: communicating with a large number of geographically dispersed business unit leaders; and creating a way for new ideas to bubble up within an organization.

In today's highly collaborative business environment—where managers and thought leaders span international boundaries and time zones—traditional meetings and conventional interactions are no longer adequate. More organizations are turning to virtual gatherings, internal blogs, and enterprise equivalents of MySpace or Facebook pages to connect and share business-relevant documents, and widget environments to develop and share business analytics quickly and seamlessly.

When IT standardizes and supports these tools effectively, agile business practices result. Suddenly, managers and IT executives have access to comprehensive information about internal processes, business outcomes, partner processes, customer preferences and broader market conditions and forecasts. They are able to change course more quickly and seize business opportunities.

Building a Better Business Platform

As organizations and IT departments are asked to do more with less, greater efficiency is more than a goal—it's a requirement. Investments in key technologies can pay enormous dividends and boost the value of various systems. These same organizations can evolve to a mindset of addressing IT and business complexity as an ongoing management priority rather than a series of disjointed projects.

However, organizations must understand this equation and find ways to manage risk—by linking it to agility enhancement initiatives. The fact remains that today's governance, risk and compliance planning parameters usually reflect the existing top-heavy command-and-control structures in place within most enterprises. Only with better strategy management tools and an understanding of the power of emerging technologies will companies learn to put risk in the proper place—and develop a business performance platform that unleashes the full power of human intelligence while tapping into the full value of the information contained within various enterprise systems.

Only then will a fully collaborative, distributed model of accountability and authority be possible, allowing enterprises to harness the full lifecycle of data and take advantage of the enormous opportunities that today's business environment offers. ::



With a clear enterprise IT management strategy in place, companies can adopt innovative and beneficial technologies such as Web 2.0 and SOA.

To get more in-depth coverage of IT's role in helping management become more agile, read PwC's most recent Technology Forecast—now a quarterly journal—at www.pwc.com/technologyforecast.



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form for delivering multimedia content. To date, Vanguard has posted 73 podcasts and 40 videos.

It was an uncommon step for a financial services company, says CIO Paul Heller. He thinks that the materials, which have been downloaded by investors nearly 1 million times, have helped both the company and its customers weather the current economic downturn. Vanguard claims it led the mutual fund industry in cash flow in 2007 with more than \$100 billion in new investments into its funds. Its mutual fund redemption ratio (a measure showing how many dollars leave Vanguard) is at a record low. "I'm convinced that the positive part of this recession is that the technology can still enable people to invest," Heller says.

Vanguard's nearly 5 million registered online customers are a tech-savvy bunch; most do their transactions on the Web. "The trend toward Web 2.0 seemed obvious," he says. Heller's team used Adobe Flash for interactive content and video, and MP3 for podcasts. The files are hosted within Vanguard's data centers and through third-party hosting providers.

Vanguard won't move to the bleeding edge but it does want to stay ahead of its competitors. To do so, Heller intends to repurpose what companies such as Amazon.com do to develop new ways of delivering information. "They are on the forefront of what's happening with the Web," he says. —J.D.

Editorial Assistant Jarina D'Auria can be reached at jdauria@cio.com. To read a longer version or to comment, go to www.cio.com/article/440729.



{VANGUARD CONTINUED}

disaster. NHLS gets data on housing inventories from more than 100 private and government data providers. Among its features, NHLS uses a Google Maps mash-up to easily and quickly display views of available properties. The system was used to relocate families in Florida displaced by tornadoes in 2007 as well as families in California who lost their homes to fires in October.

UniGroup

RANDALL POPPELL, CIO & SVP, Strategic Planning

Richard McClure, President & CEO
2007 Revenue ► \$2.2 billion

TRANSPORTATION UniGroup deployed the Store and Move (SAM) system to support its new container-services subsidiary, which it launched to compete with similar companies such as Portable On Demand Storage (PODS). The system was developed in-house using the Agile software-development methodology and a service-oriented-architecture (SOA) approach to increase the probability of creating systems with immediate business value that could evolve with changing market conditions. To date, the SAM business unit has signed 90 dealers, has extended its market presence to 55 metropolitan areas and has the second-largest share of the one-way container move market.

University of Notre Dame

GORDON WISHON, Associate VP, Associate Provost & CIO

John Jenkins, President
2007 Revenue ► \$737 million

EDUCATION The University of Notre Dame replaced 3,364 wireline telephones in its residence halls with a multicarrier cellular distributed antenna system supplied by NextG. Notre Dame redirected the \$1 million per year used to pay for the residence-hall telephones to fund a 10-year contract with Comcast to bring cable TV to all campus student rooms and Wi-Fi access to all residence halls. An emergency system employs multiple communications conduits, including cellular broadcast via the NTI Group's Connect-Ed emergency notification service and video feeds via the Comcast campus cable system.

University of Pittsburgh Medical Center

DAN DRAWBAUGH, SVP & CIO

Jeffrey Romoff, President & CEO
2007 Revenue ► \$6.8 billion

HEALTH CARE University of Pittsburgh Medical Center (UPMC) partnered with IBM to deploy a \$352 million on-demand computing infrastructure. Taking advantage of technologies such as virtualization and autonomic computing, the on-demand partnership involved reengineering UPMC's technology infrastructure. During the transformation, the tools and processes have been refined, validated and packaged as solutions, marketed by IBM and UPMC. The initiative has saved \$30 million over a three-year period.

Vanguard Group

PAUL HELLER, Managing Director & CIO

John Brennan, Chairman & CEO
2007 Revenue ► \$2.1 billion

FINANCIAL SERVICES Vanguard deployed its Digital Communication Initiative in order to transform the mutual fund provider into a digital media company. Vanguard took advantage of Web 2.0 technologies to translate its printed financial education content into multimedia. The project, involving at least 15,000 man-hours, includes a website redesign; experimentation with making content portable through RSS feeds, bookmarking sites, and YouTube and iTunes; evaluation of the use of online communities; and a customer personalization project. So far, customers have downloaded 700,000 podcasts, Web articles get 300,000 views per month, and the company has created 40 Web videos.

VCU Health System

RICHARD POLLACK, VP & CIO of IS

John Duval, CEO
2007 Revenue ► \$1.2 billion

HEALTH CARE The PatientKeeper Physician Information System deployed by VCU Health System integrates data from multiple healthcare information systems across the medical center into a single unified view that allows physicians to automate their day and improve patient care. Physicians and other healthcare providers can access information via mobile

technology or Web-based portals or both. From appointment schedules to automated entry of reimbursement charges, physicians and healthcare providers can be informed wherever they are, at the bedside or across town at their office. VCU says this solution also reduces the time it takes to submit charges, reduces missed charges and improves the coding accuracy of billing, contributing to improved financial performance.

Veterans Health Administration

CRAIG B. LUIGART, CIO

Michael J. Kussman, Under Secretary for Health

2007 Budget ► \$36.2 billion (medical care)

GOVERNMENT The Veterans Health Administration deployed a Web-based portal that enables veterans and employees to create and maintain personal health records for veterans. Veterans can easily track, record and graph metrics like weight, blood pressure and blood glucose, and keep their health records current. A customized summary of all

relevant information can be created with a few mouse clicks and printed for sharing with the patient's healthcare provider. Veterans have also used the system to order more than 5 million prescription refills. The program has more than 539,000 registered users.

Viacom

JOE SIMON, CIO

Philippe Dauman, CEO

2007 Revenue ► \$13.4 billion

MEDIA Viacom needed to upgrade its existing portal for companywide communication and collaboration. Using Microsoft SharePoint for use allowed the media giant to give its business groups a single source of information as well as a standardized process for collaboration that is cost-effective and easy to use and integrates with the existing IT infrastructure. Responsibility for content management and site maintenance has moved to the business groups and end users. For its part, IT has been able to move from day-to-day management and maintenance of the sites to being able to develop applications to streamline and improve the business.

Villanova University

STEVE FUGALE, CIO

Peter Donohue, President

2007 Endowment ► \$336 million

EDUCATION Villanova deployed new intelligent communications networking and applications, including unified communications computer telephony and contact center applications, in order to foster communication, collaboration, safety and high-tech learning experiences among students, faculty and staff. The Avaya and Extreme Networks IP network links 60 buildings on Villanova's campus and supports a mix of 3,500 IP, digital and analog phones. The network allows Villanova to use the type of phone most practical for a given use and location. For example, feature-rich IP or SIP phones are used by staff members and will be incorporated into all new buildings.

VocaLink

NICK MASTERSON-JONES, Director of IT Development

Marion King, CEO

2007 Revenue ► \$270 million

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FINANCIAL SERVICES VocaLink processes domestic and international automated payments and provides ATM switching solutions. It was one of the first companies in the U.K. to deploy virtualization across the entire desktop, using a new operating environment called Softgrid (since purchased by Microsoft). VocaLink then engaged with key suppliers to create a leading-edge technology stack that lifted virtualization technology into both a server-based-computing and virtual-desktop-infra-structure environment. Benefits include improved user experience, increased security, reduced infrastructure and hardware costs, and a smaller carbon footprint in the data center and on the desktop.

Welfare Client Data Systems Consortium

BOB HENDRICKS, Executive Director
Julie Hornback, Board Chair
2007 Revenue ► \$80 million

GOVERNMENT Welfare Client Data Systems Consortium (consisting of

18 California counties) developed and implemented the CalWorks Information Network (CalWIN) to more efficiently administer public-assistance programs for their respective communities. CalWIN is an integrated online, real-time, automated system with 26 subsystems to support eligibility and benefits determination, client correspondence, management reports, interfaces and case management for public-assistance programs such as food stamps and foster care. CalWIN, which processes 11 million transactions daily, has significantly improved delivery of services to the state's increasingly diverse population. The consortium estimates total savings from the project to be more than \$500 million through 2011.

WellPoint

LORI BEER, Acting CIO
Angela Braly, President & CEO
2007 Revenue ► \$60.1 billion

HEALTH CARE WellPoint created a new online consumer portal, called 360° Health, to give consumers a new and innovative way to access personal-

ized healthcare and benefit information, interactive tools, and Facebook-like communities for a better approach to health, disease management and treatment options. The portal has a tool, Mobile Provider Finder, which allows members to search for local, in-network doctors and hospitals through any Web-enabled cell phone or handheld device. Fifty-nine percent of members enrolled in the diabetes management program improved their clinical scores, and 84 percent of members enrolled in another program improved their LDL cholesterol scores. One of the featured programs resulted in an ROI of \$2.81 for every dollar spent by WellPoint's customers.

Wells Fargo Financial

TOM GRETEMAN, CTO
Thomas P. Shippee, President & CEO
2007 Revenue ► \$18.4 billion

FINANCIAL SERVICES Wells Fargo Financial used business process management (BPM) along with agile software development to reduce the time required to redesign its new-dealer

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setup process and redeploy it into production from more than a year to less than one month. The process-focused, iterative development approach that reduced the amount of code WFF needed to develop and maintain it also provides a better framework to ensure that business users and IT are on the same page. Increasing the role of the business analyst in the development process was a crucial aspect of WFF's success.

Wind River Systems

SCOTT FENTON, CIO

Ken Klein, CEO

2007 Revenue ► \$285 million

COMPUTER SOFTWARE Wind River automated and streamlined its order-to-cash process, integrating a number of legacy applications and providing a single dependable database for all its customer information. By integrating this data with an upgraded CRM system and overlaying it with a business-intelligence tool, Wind River's sales organization can better manage the sales pipeline and revenue-projection deals, won/lost, and

up-sell/cross-sell opportunities, etc. The project benefits not only the sales department but also customer support, operations and finance.

Wyeth

JEFF KEISLING, CIO

Bernard Poussot, President,
CEO & Chairman

2007 Revenue ► \$22.4 billion

HEALTH CARE Wyeth's SRC Technology Enablers program helped the pharmaceutical giant achieve significant process efficiencies in the development and publication of regulatory submissions. With the new tools, component authoring organizations generate consistent output upstreams in the New Drug Application submission process, enabling Wyeth's global regulatory submissions management team to focus attention on the work of publishing the submission rather than reformatting output and correcting technical issues with document navigation.

YRC Worldwide

MICHAEL RAPKEN, Executive VP & CIO
William Zollars, Chairman of the Board,
President & CEO

2007 Revenue ► \$9.6 billion

TRANSPORTATION YRC Worldwide deployed its computer-assisted bill entry (CABE) system to handle complex billing issues. CABE uses data on past shipments to predict repeat customers' shipping patterns. Analysis of 8 million shipments showed that customers consistently ship to the same sites. In addition, about half of the 8 million shipments reviewed revealed predictable shipper/consignee pairs. Projected cost savings were based on the assumption that at least 30 percent of bills within YRC's Roadway brand could be processed through the predictive engine, at a rate of 40 bills per hour, to reduce the need to reenter customer data. The company saved about \$1 million. **CIO**

Anne Alonzo is a freelance researcher. Mishal Dholakia is pursuing a master's degree in computer science at Pace University.

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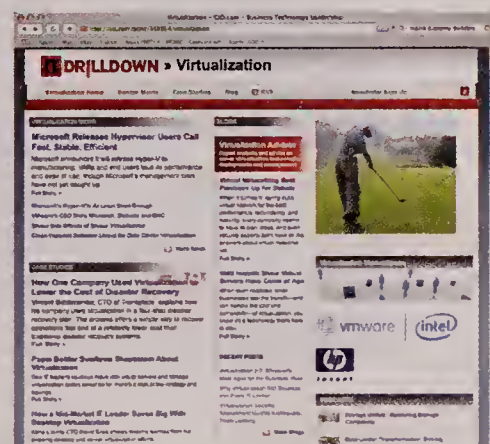
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Things I've Learned

THE VOICE OF EXPERIENCE * AS TOLD TO JARINA D'AURIA

Reformed hacker-turned-security-consultant **Kevin Mitnick** talks about his past exploits, computer security and how he turned an illegal hobby into a useful career

Hacking wasn't always illegal.

I started off in what they call "phone phreaking" in the late '70s. At this time, 1978, there were no laws against hacking. The first law that criminalized hacking was passed in 1980 in California. I was doing this before it was illegal. And my interest was entertainment: the pursuit of knowledge, challenge and the trophy of the stolen information. There was no motive for money or malicious intent to use, disclose or destroy the data.

Learn the rules before you play the game.

I knew hacking was

sneaky when I started, but I didn't think it would get me into trouble. Back in my day, they didn't teach us about ethics in respect to hacking or using computers. Now I tell kids to not follow in my footsteps. As computers become more accessible, there are more ethical ways to learn about computer security. Plus, there are laws now.

Not everyone takes security seriously.

I've been testing a company—a financial institution—and they are governed by Sarbanes-Oxley and other regulations. I've done their security assessments for the last four years and each time I get in the same way. It's surprising that companies do security audits to find their vulnerabilities but don't do much about them.

Use your powers for good, not evil.

When I was released from custody in 2000 [Mitnick served five years in federal prison for breaking into phone and software company networks], the U.S. government asked for my help. U.S. sena-

tors Fred Thompson and Joseph Lieberman invited me to testify before Congress about the government's computer security vulnerabilities. Once the restrictions of my release were up, I went into full-fledged security work, such as assessments and product evaluations. It's a reversal of fortune. Before, I was doing something exciting, but it was unauthorized and illegal. Now, I do the same thing that got me in trouble, except I do it with authorization. Clients hand me their network and tell me to break in so they can fix security vulnerabilities.

Even hackers get hacked.

Attackers found a way onto my Web server. Of course it's embarrassing and I don't like it. Fortunately, I don't have any proprietary information on my public-facing servers. The downside is that people think my company was hacked, but it was really the hosting company's network that was breached.

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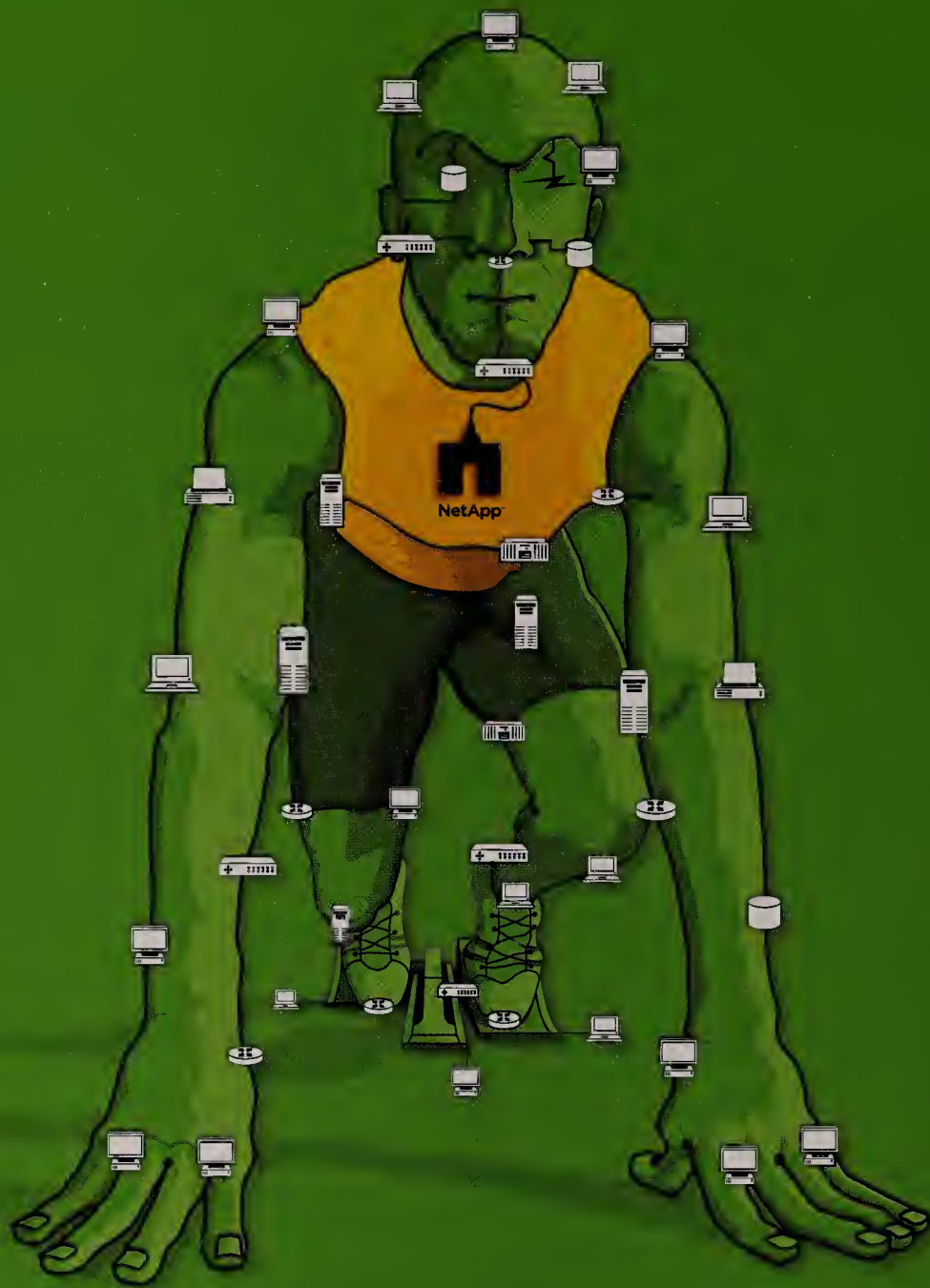
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